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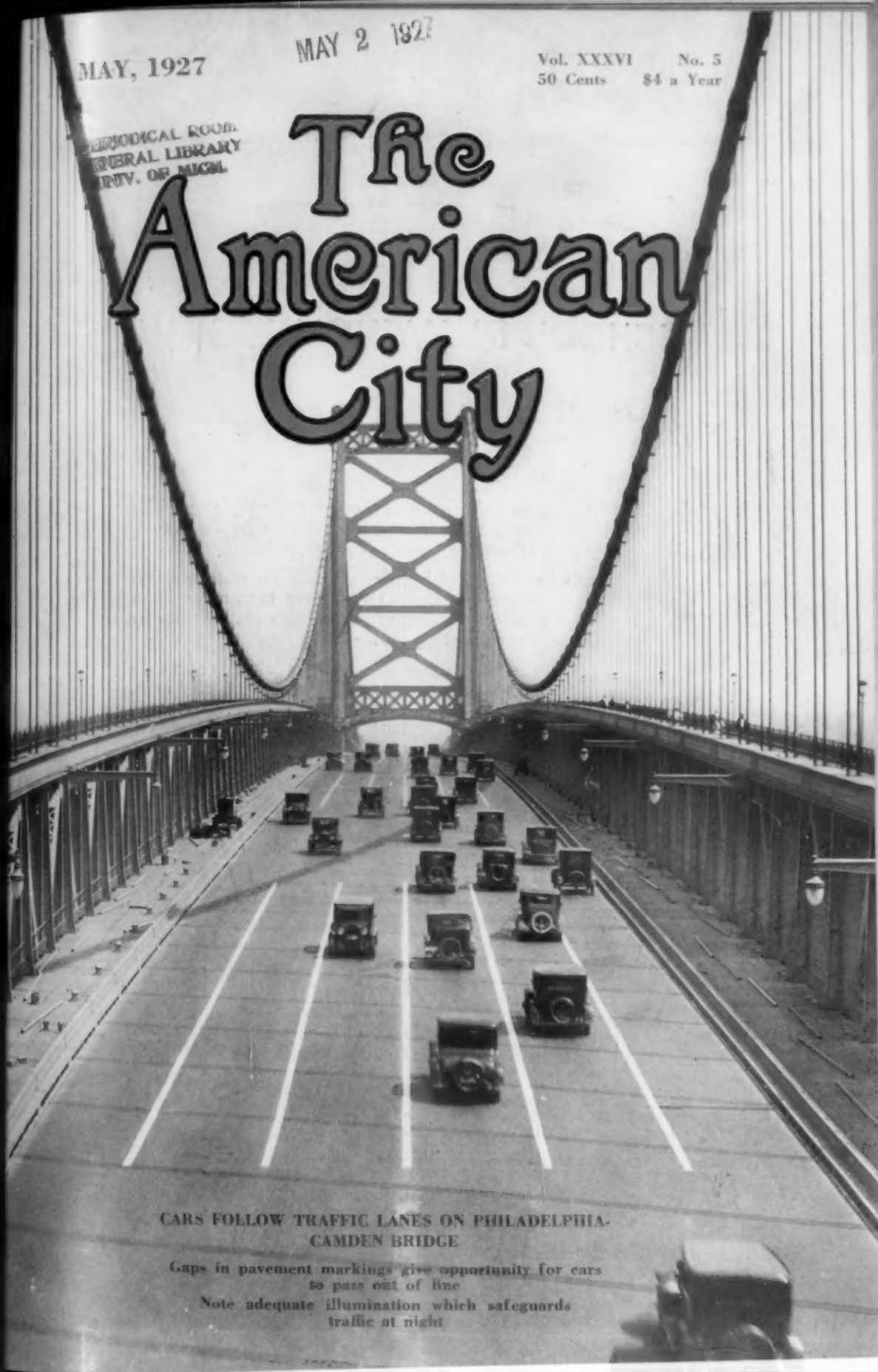

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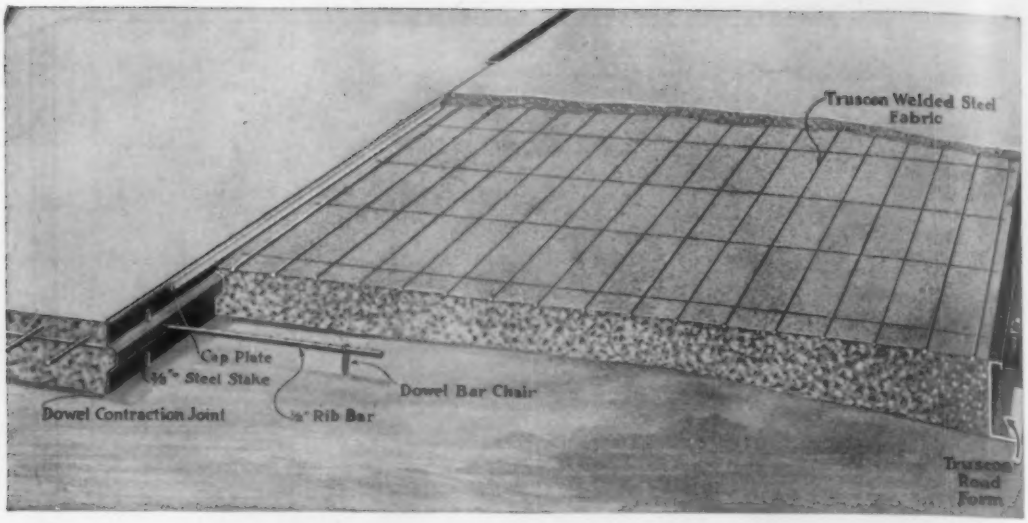
Vol. XXXVI INDEX TO CONTENTS, MAY, 1927 No. 5

Accident Prevention
Fourth of July Is Coming 605
A Novel Welded Guard-Rail 624
Warning-Torch for Construction Work 738
Aerial Surveying in Darien, Conn 640
Buildings and Building Codes
Asheville's New Buildings 680
Structural Steel Specifications 693
Auditorium Floors Wear-proofed 725
Cartoons 605
City and Regional Planning and Zoning
City Planning as an Aid to Traffic 664
Suburban Town Development Safeguarded 668
Principles of Regional Planning 673
Zoning Notes 703
Conventions—When and Where 713
Crime and Its Treatment 625
Election in Chicago 691
Engineers, Scientists and Public Service 598
Finance and Taxation
Changing the Map 595
Apportioning Special Assessments 637
Will Taxes Ever Come Down? 660
State Requirements for Municipal Accounting and Budget Making 667
Collecting Delinquent Paving Taxes 676
Taxpayers' Association, Fall River 678
Appropriations 695
The Municipal Bond Market 705
Shifting of Deficit Prevented 705
Fire Prevention and Control
A Suggested Fireworks Ordinance 604
Achievements of Fire Prevention 685
American Fire Losses, 1925 689
No More Wooden Roofs for New York 689
Civil Service Requirements, Fire Chiefs .. 693
Forestry
Organization of Shade Tree Work 649
Power Spraying of Shade Trees 725
Forward Steps 677
Garbage Incineration for Small Cities 629
Government, Municipal and Regional
Pittsburgh Plans Greater City 596
Holmes County, Ohio, Wants Statehood .. 610
Metropolitan Districts, Michigan 653
Graph Showing Development of Flint, Mich. . 677
Health and Sanitation
Supervision of Tourist Camps 661
Court Decisions on Public Health 672
Examining Food Handlers, Newark 691
Highways
Hot Application Surface Treatment 617
Rock Asphalt for Resurfacing 622
Efficient Road Maintenance 644
Paving Between Car Tracks 691
Protective Coating for Concrete Pavements 717
Improvements in Paver 721
Third Annual N. E. Outdoor Road Show .. 721
Motor-controlled Grading Machine 727
National Conference on Asphalt Paving .. 731
Steel Road Forms 733
Improved Oil-Burning Melting Kettle 735
Housing in Kohler, Wis 669
Human Life, Economic Value of 691
Items and Ideas 691
Legal Decisions 699
Library Window-Sill Display, Cincinnati ... 679
Lighting
Lighting the Largest Suspension Bridge .. 609
Street Lighting in Miniature 657
Classifying and Financing a Street-Lighting System 672
Motion Pictures and Theatres
Sunday Motion Pictures, Fitchburg 679
Regulating Amusement Places, New Haven 681
News and Illustrations 717
Nuisance of Odor Eliminated, Troy, N. Y. .. 681
Ordinances Codified, Bismarck, N. Dak. 677
Parking Space Provided by Lafayette, Ind. .. 631
Police
Tests for Selecting Sergeants 665
Volunteer Police Force in Small Town ... 693
Political Boss Forced into the Open 658
Publications 707
Schools
Larger Support by Counties and States .. 594
Civic Education, New York City 615
Sludge Digestion 633
Street Cleaning and Snow Removal
Efficient Street-Cleaning System 654
Hardwood Picket Snow-Fence 727
Street Play and the Automobile 590
Street Signs and Other Improvements .. 380, 735
Swimming Pools in California Cities 591
Traffic and Transportation
East Cleveland Traffic Signals 599
Handling Non-Stop Traffic 611
Comments by a Signal Engineer 614
Progressive Traffic System First Suggested 615
Greatest Field for the Bus 632
Yellow Pavement Markings, Milwaukee .. 677
New Pedestrian Sidewalks Proposed 683
Ventilating-Fans for Holland Tunnel 731
Improved Road-Marking Machine 733
Water-Supply and Water-Works
The Extension of Distribution Systems .. 606
Low-Pressure Pumps for High-Pressure Service 616
Pressure Filter Plant for City of 3,000 .. 621
Largest Shipment of Chlorine Control Apparatus 717
A. W. W. A. Convention 721, 729
Spiral Riveted Pipe 723
Combined Check- and Gate-Valve 723
Pipe Pusher for Installing Services 729

See also Municipal and Civic Publications, page 707

The offices of THE AMERICAN CITY, 443 Fourth Ave., N. Y., are headquarters for information on equipment for municipal work. If you want catalogs, prices or names of manufacturers, let us help you.



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No. 5

MAY
1927

The American City

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50 Cents
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Street Signs, House Numbers, Sidewalks, Street Lighting and Other Municipal Improvements as Aids to Mail Delivery

By Harry S. New
Postmaster General of the United States

THE Post Office Department will greatly appreciate any cooperation which THE AMERICAN CITY can render in the matter of urging upon municipalities the great importance of proper naming, numbering, and marking of streets and buildings.

This subject is one of great importance to the postal service. Mail cannot be properly addressed and promptly and accurately delivered unless streets are suitably named, street signs erected, and building or house numbers provided. Consequently, we have laid down the general rule that to entitle a city or town to delivery service, there must be good, continuous sidewalks, crosswalks, street lights, street signs, house numbers, and a door slot or mail receptacle at each dwelling or place of business.

In addition to the foregoing, to avoid confusion and delay to the mails, and possibly loss, there should be no duplication of street names within any city or town, and some acceptable system of numbering should be adopted and uniformly followed throughout the city. Furthermore, owners of improved property should be required by the municipalities to erect the proper house or building numbers. This should be done in the case of offices or apartment buildings bearing names, as it cannot be expected that every postal employee in the city shall know the names of all such buildings, which can invariably be promptly located if the name of street and number of building are shown in the address.

Occasionally, because of the action of postmasters in extending city delivery service to sections not having the required civic improvements, or in cases where such improvements were originally provided but have been permitted by municipal authorities to fall into a state of disrepair, it becomes necessary for the Department to issue a notification of the withdrawal of delivery service unless conditions are remedied, although it is not our desire to discontinue a service, once established, if it can be avoided.

The Era of the Automobile Must End the Era of Street Play

A CHILD was killed in Somerville, Mass., recently while gliding along the street on one roller-skate. Following the death, Frank A. Goodwin, State Registrar of Motor Vehicles, issued a statement urging parents and teachers to do all possible to prevent street skating in future. He refers in this statement to the recent tremendous increase in the numbers of children to be seen in the streets on roller-skates and issues a warning against this "one more menace" on the highways of Massachusetts. Accident statistics will show that this warning might apply with equal force to other states. According to figures made public in April of this year by the Health Commissioner of New York City, 422 children were killed on the streets of that city alone during 1926—figures which show a substantial increase over those for 1925 from the same source.

"While it is true," Registrar Goodwin states, "that children must play somewhere, it is equally true that automobiles have some rights on the highways. No motorist can tell what a child on roller-skates is going to do, because the child, especially a small child, doesn't know what is going to happen to him next.

"There is no way of preventing children from skating in the streets through law, because no penalty can be meted out in the courts to small children, but it is too bad that some punishment cannot be meted out to fathers and mothers who are foolish enough to buy roller-skates for their children and then permit them to skate in the street filled with death-dealing motor vehicles."

Summer and the season for outdoor play have come, and as the Massachusetts official points out, there are difficulties in attempting to legislate against child play. It would be as easy to legislate against the dandelion that pushes through the broken curbstone at the edge of the street. There are even difficulties in dealing with the parents. But fortunately the rights of the child are beginning to be generally recognized as including better places to play in than the streets ever provided. City planners, regional planners, and experts in other phases of complex modern life are carefully mapping out streets adequate for the ever increasing flow of motor traffic, and with equal care are mapping out adequate playing areas. Parks and playgrounds have for some time been generally recognized as having their important part in promoting child health and preventing juvenile delinquency. They are coming to be recognized as an essential of child safety.

EIGHT CHILDREN DIE IN AUTO ACCIDENTS

Angry Crowd Menaces Taxicab Driver Who Runs Down 3-Year-Old Boy.

FIVE KILLED BY TRUCKS

Six Victims in New York City—Two Others in Jersey City—Eldest Is 12 Years Old.

From the "New York Times" of April 13, 1927

ONE DAY'S RECORD IN NEW YORK AND JERSEY CITY—AND NOT IMPORTANT ENOUGH TO GET FRONT-PAGE SPACE

Only a few years ago recreational officials, in setting forth recommended requirements for playing-spaces in cities, specified adequate playground areas within one-half mile of every city home. In forward-looking cities today even these requirements are no longer regarded as adequate. Thought is being taken for the small children, and more and smaller playgrounds are being provided to supplement the larger playing-areas, because city planners, recreational experts and others realize that the trip back and forth to the playground a half-mile away is one of the constant invitations to street roller-skating and similar practices and one of the contributors to the death-toll from motor-vehicle accidents among children. When more of the playground expansion programs already under way in American cities have had time to be completed, the motorists' rights to the highways will be no longer invaded by youthful jay-skaters; given the choice, the child does not select the street as a place in which to play.

The Year Book (April, 1927, edition) of *The Playground** shows analyses of America's twenty-million-dollar expenditures on official play budgets last year.

* Published by the Playground and Recreation Association of America, 315 Fourth Avenue, New York.

Some of California's Municipal Swimming Pools

By George W. Braden

Western Representative of the Playground and Recreation Association of America

CALIFORNIA'S cities, both large and small, have made great strides in the development of municipal swimming pools and additional provision for aquatic sports during the last three years. The mild climate prevailing in most parts of the state through a large part of the year, and a smaller proportion of natural waterways than prevails in most of the cities along the Atlantic seaboard and in the Middle West, have been factors in causing western cities to make large capital expenditures on this phase of the municipal recreation program. Later, we hope to develop a separate statement on swimming pools in connection with the California schools.

In offering a statement on California municipal swimming pool developments it seems better, in most instances, to incorporate the information coming directly from municipal representatives.

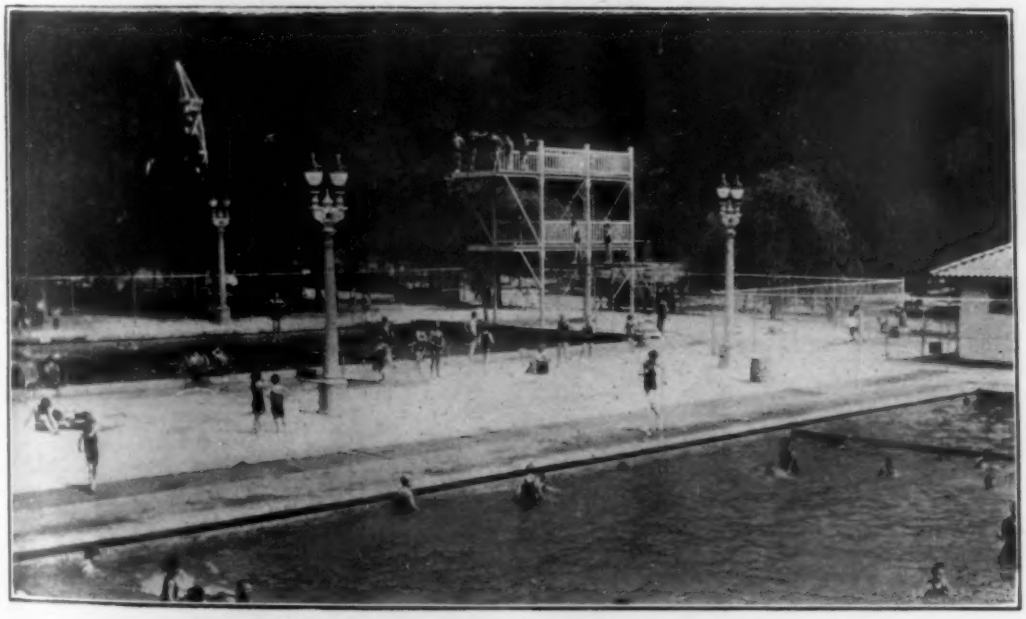
Pasadena

BROOKSIDE PLUNGE, PASADENA.—Under management of Gilbert L. Skutt, Superintendent of Parks. "The Brookside Plunge is by far the most popular of any facility which is provided by the Park Department of Pasadena. It comprises two pools, one built during the year 1914 and the other built during the spring of 1923.

"The older pool has a width of 50 feet, and a length of 100 feet, and a depth varying from 2 feet to 4 feet in a distance of 70 feet 6 inches, at which point a baffle-wall 6 inches thick is placed. The remaining 29 feet varies from 4 feet to 8 feet in depth. The shallow portion of this pool is used primarily by young children, the deeper portion by those who are moderately good swimmers. In the accompanying picture this pool is shown in the foreground. It requires 155,400 gallons of water to fill it.

"The newer pool has a width of 50 feet and a length of 150 feet. Its depth varies from 4 feet to 5 feet in the first 60 feet, thence from 5 feet to 12 feet in the next 40 feet, and from 12 feet to 12 feet 6 inches in the last 50 feet. There is no baffle-wall or other obstruction inside of this pool. It requires 457,200 gallons to fill it. Alongside this pool are a 3-foot and a 10-foot springboard and a diving-tower having one platform 12 feet above the water and another 22 feet above the water. In the photograph this pool, as well as the three units of apparatus, appear in the background.

"In order to care for the large number of patrons, we have built on the men's side 89 dressing-rooms and 440 lockers, while on the ladies' side we have built 112 dressing-rooms and 169 lockers. The facility has a Page woven-wire fence 84 inches high entirely around it.

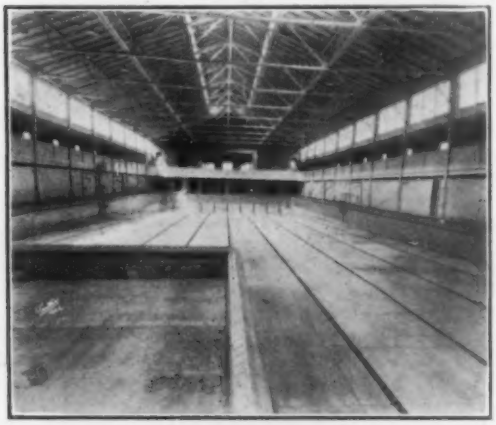


THE BROOKSIDE PLUNGE, PASADENA, CALIF.

"Each pool is provided with a filtration plant, built by the California Filter Company, of San Francisco, the water being pumped through the filters by Byron Jackson pumping apparatus at the rate of 750 gallons per minute, thus removing sediment or any other insoluble material. The bacteriological count is maintained at a low level through the use of liquid chlorine fed through a Wallace & Tiernan automatic chlorinator. The supervisor tests the water very frequently for chlorine content, while the Health Department makes frequent tests for bacteriological count.

"We have a heating plant in connection with the plunge, with which we maintain the water at a comfortable temperature in the early spring and late fall.

"The bathing-suits and towels are passed through the laundry each time that they are used, where they are given the necessary treatment to remove all dirt and any disease germs which they may contain, after which they are hung in a sun drying yard. The laundry is equipped with tubs and washing machine and an extractor of the latest design. All of this machinery is made as safe as it is possible to make it. Showers having a plentiful supply of warm water are installed, as each patron is required to take a shower-bath before entering the pool.



THE MUNICIPAL NATATORIUM, RICHMOND, CALIF., WHEN EMPTY

"The prices of admission vary according to age. The charge for those under 12 years, 15 cents; from 12 to 16 years, 25 cents; and for all adults, 40 cents. This scale was adopted in order that the young boy or girl who finds it difficult to obtain money may always enjoy the plunge.

"In connection with the plunge there is a diving instruction yard, containing a pipe frame within which the prospective diver is carried by means of a belt, ropes, and pulleys. Adjacent to this is a standard diving-board where the student may dive, under the observation of an instructor, who can correct any faults of form.

"The plunge is open to the public from 9:30 A. M. to 9 P. M., except when the evenings are cool and there is no attendance, in which case the plunge is closed at about 6 P. M.

"The largest attendance we have ever had was 2,648 persons and occurred on May 31, 1926."

Glendale

GLENDALE MUNICIPAL PLUNGE.—Under the management of the Parks, Playgrounds and Recreation Commission. "The Glendale Municipal Plunge, operated in Fremont Park, is an outdoor concrete pool, 30 feet by 90 feet, graduated from 2 feet to 8 feet, one-half of the pool being less than 5 feet. It is an empty-and-fill plunge and has a pressure chlorine apparatus for treating the water.

"It was operated throughout the summer far beyond its capacity, many days having an attendance of 500 to 600. During 1926 it was open from May 30 to October 1.

"Admission charges are as follows: children under 16, admission 5 cents, suit and towel 5 cents; adults over 16, admission 15 cents, suit 5 cents, towel 5 cents."

Glendale is looking forward to a new municipal swimming pool to be open all year round. Although nothing definite has been done, the Parks and Recreation Commission, under its President, L. H. Wilson, is working on plans and prospective sites.

Richmond

RICHMOND MUNICIPAL NATATORIUM.—Under the direct management of City Manager J. A. McVittie. "This building is 100 by 200 feet, and the plunge is 60 by 160 feet. The capacity of the

MUNICIPAL NATATORIUM BUILDING, RICHMOND

plunge is 365,000 gallons of water. The water in the plunge is composed of about 50 per cent salt water and 50 per cent fresh water, as we find that the swimmers would rather have this mixture than all salt water. All the water in the plunge passes through the filters in six hours, and as we operate our filters eighteen hours out of the twenty-four, all the water passes through the filters about three times each day. In the women's dressing-room section there are 133 dressing-rooms, and in the men's dressing-room section there are 80 dressing-rooms and 284 lockers. The cost of the natatorium, including all equipment, was $150,000."

THE YOSEMITE PLUNGE, LOS ANGELES

Los Angeles

YOSEMITE PLUNGE, LOS ANGELES.—Under the management of George Hjelte, Superintendent of Recreation. One of the seven plunges operated by the Municipal Recreation Commission of Los Angeles. The Commission also operates six miles of bathing-beaches. "The Yosemite Plunge is 50 x 175 feet, and rectangular in shape. Its two ends are shallow, 2 feet 6 inches and 3 feet respectively, while the center is a deep section which is 8 feet in depth. This type of pool was adopted by reason of the fact that partial segregation of the sexes could be made without making two pools, and also without making a hardship on the families who wish to swim together.

"The pool contains 294,375 gallons of water, which is completely refiltered every eight hours. The filtration plant consists of three 8 x 10 horizontal Graver filters which have a filter area of 205.5 square feet. The filter system is designed, with its pumps, motors, etc., to let 3 gallons of water pass over each square foot of filter area each minute. The Wallace & Tiernan gas chlorinator is a part of this equipment.

"The pool is also equipped with a suction cleaner whereby the walls and floors may be cleaned as one would vacuum a floor."

Stockton

STOCKTON MUNICIPAL BATHS.—Under management of Bert Swenson, Superintendent of Recreation. The Stockton Municipal Baths are 425 feet in length by 125 feet in width at the widest portion, one wing being graduated in depth from 1½ to 5 feet, the other wing being graduated in depth from 3 to 5 feet, with the central portion graduated in depth from 5 to 8 feet. Both ends are covered with lattice shade, which is proving most satisfactory. The pool, which was purchased from private parties who were maintaining it at a loss, is now serving a great community need and receipts more than cover operating expenses."

San Francisco

THE FLEISHHACKER MUNICIPAL SWIMMING POOL, SAN FRANCISCO.—Under the management of the Park Commission. "The Fleishhacker Plunge is 1,000 feet long by 100 feet wide, with an offset in the center section 150 feet wide by 1,000 feet deep, with diving-towers calculated to accommodate 50-yard straightaway races, water polo and other swimming events requiring arbitrary spaces. This section has an average depth of 6 feet. The pool in its entirety has a depth graduated by a uniform slope, with a maximum of 9 feet on the north and 3 feet on the south end. At the north end there is also a diving-section 50 feet square and 14 feet in length, which has been designed to accommodate all heights of dives.

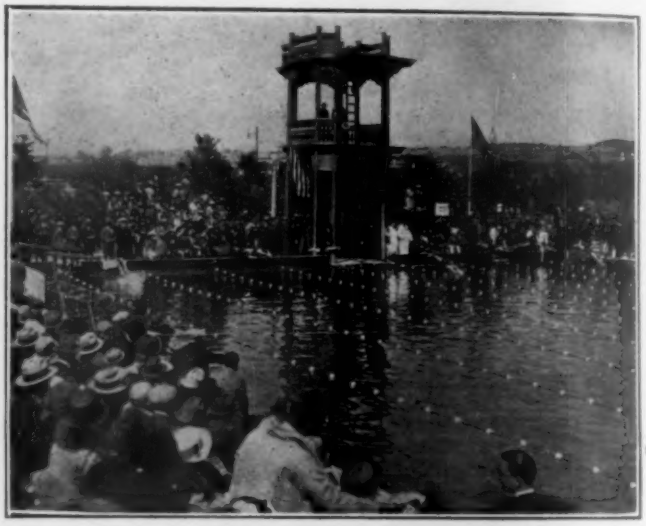
"The capacity of this great pool is 5,339,640 gallons of salt water, affording a surface sufficient

THE MUNICIPAL BATHS, STOCKTON

AIRPLANE VIEW OF SWIMMING POOL IN FLEISHBACKER PLAYFIELD, SAN ANTONIO

for 10,000 bathers at the same time, with appliances for filling and refilling as rapidly as would be possible in a body of water of its tremendous size. The retaining walls are of reinforced concrete, with the submerged surfaces so treated as to be completely proof against the action of salt water.

"The service structures on the ocean side of the pool, highly ornamental in design and construction, contain 800 dressing-rooms, hundreds of steel lockers, many fresh-water showers and ample rest rooms below, while on the second floor of the main building are an elaborate cafeteria and an ice cream saloon with entrances from the Sky Line Boulevard. Approximately 1,000 nearly full-grown trees, transplanted from the more congested regions of Golden Gate Park, have been placed to protect the pool on the ocean side, in addition to the high sand-dune on the crest of which stretches the beginning of the new Sky Line Boulevard. A promenade 50 feet wide surrounds the entire structure, and this is further beautified by a bisecting strip of lawn, with an Alameda effect of pine trees 25 feet apart to furnish shade and shelter."



THE GREAT SAN FRANCISCO POOL, WITH LANES FOR SWIMMING RACES

With very few exceptions, the California municipal plunges secure annual receipts from maintenance and operation considerably in excess of expenses; in fact, two cities are securing a sufficient net income on operation to cover the capital investment in a term of years.

Other California cities which are maintaining municipal plunges with considerable success include Anaheim, Bakersfield, Colton, Corona, Riverside, Redlands, Alhambra, Englewood, Monrovia, Palo Alto, Pomona and Santa Rosa.

Advocates Larger Support of Public Schools by Counties and States

RESOLUTIONS adopted by the Department of Superintendence of the National Education Association at its annual convention in Dallas, March 3, 1927, included the following:

"That children of rural districts and of towns and cities of less wealth may not lack essential opportunity for education that will enable them to live and serve as well as those who are fortunate enough to be reared in wealthier communities, we repeat our former recommendation that a large portion of the support of schools be assumed by the larger units of county and state. That taxation for education may be more evenly distributed, we recommend careful study of the principles of taxation and the progressive adoption of modern, equitable, and scientific methods of obtaining revenues for the support of schools.

"We recognize that under our form of government responsibility for the support and administration of education rests with the states. In order that they may more fully and effectively meet this responsibility, state and county school administration should be kept free from partisan and factional politics. We believe this can be accomplished best through rightly constituted state and county boards of education with administrative officials selected by and responsible to these boards. The wisdom and effectiveness of this policy have been demonstrated in city school administration. We recommend its adoption in all school administrative units, whether state, county or other units."

Changing the Map

Former Mayor Magee Sees a Joker in the Pittsburgh Metropolitan District Scheme

By William N. McNair

Attorney-at-Law, Pittsburgh, Pa.

A SCHEME, long in favor with political workers and often worked with success, by which an opponent is eliminated not by direct opposition but by changing his district, is now being used in wider fields. In the old convention days, a delegate who was sure of election in his district, but by reason of the changes in the territory was unable to withstand the new opposition, was heard to say, "Well, they had to change the map to beat me."

Pittsburgh and Scranton, the two second-class cities in Pennsylvania, have been experimenting with an approach to land-value taxation. Under the graded tax law, as it is called, the rate on buildings is now one-half the rate on land. Of course, this law has not been popular with the land speculators, and at various sessions of the Legislature repealers have been introduced; but the opposition shown by the various trade bodies has always been so great that these bills seldom get out of committee.

What cannot be done by direct opposition is now being attempted rather subtly in the case of Pittsburgh, by changing the map. That city has long felt that she is being passed in population by other municipalities by reason of the fact that other places have extended their boundaries. The surrounding boroughs have been unable to join with the city because their local politicians could not be pried loose. So the metropolitan district idea began to gain in favor. An elaborate scheme was worked out and presented to the various civic bodies and received favorable consideration on all sides. A constitutional amendment was drawn up and passed at one session of the Legislature and has again passed at the session this year. When submitted to the voters of the state, if this constitutional amendment is adopted, the graded tax plan will be no more. The small home owner will not know how it happened, but while his taxes are doubling, the vacant-land speculator will have his cut in half. A close reading of the plan for the metropolitan district is required to discover the joker. At a recent luncheon of the Henry George Club, held in the Chamber of Commerce, the plan was rather tersely set forth by former Mayor Magee as follows:

"In 1913 we offered a bonus to the owner who improved his land, and now such a one pays a tax on only one-half of the value of his buildings. At least partly as a result of abolishing the agricul-

Taxation and a Greater City of Pittsburgh

Two experiments of outstanding importance are under way in Pittsburgh. One of these—which in the opinion of many competent observers has demonstrated its practical value—is the graded tax law. The second is the movement, which had legislative sanction last month, for what will be the world's most complete experiment in federated city government.

Because of the serious danger of a clash between these two ideas, and the importance of reaching an agreement by which the best features of both can be preserved, The American City submitted a copy of Mr. McNair's article to the Pittsburgh Chamber of Commerce for comment. Through the cooperation of Manager A. V. Snell, the article (beginning on the next page) by Professor Thomas H. Reed, consultant in the drafting of the proposed constitutional amendment for the Greater City of Pittsburgh, was received. This in turn has been submitted to Mr. McNair, who writes:

"I have read with interest Professor Reed's article, and in my opinion he still does not answer the argument that the consolidated city will take from the present city the greater part of its functions and leave very little revenue to be raised by the graded tax law."

It would appear, however, that much will depend on just how the charter to be authorized by the proposed constitutional amendment is finally framed; for Mr. McNair's letter encloses a brief prepared by a conference of attorneys and civic bodies, the opening paragraphs of which read:

"The greatest single danger that will confront the advocates of the adoption of a charter under the Pittsburgh Metropolitan District Amendment relates to the subject of taxation. If a just, equitable and scientifically sound policy of taxation is followed in the framing of the charter, and if such policy is based upon laws already upon the statute books and in operation in the present city when the charter comes before the Legislature and the people of the county for adoption in 1929 or any year thereafter, it is believed there will be little opposition to the new charter in the city of Pittsburgh, and the opposition in the outside cities, boroughs and townships will be deprived of practically the only well-founded argument which they might advance. Such a taxation policy will offer the greatest possible incentive to the vast majority of the voters in the county to favor the charter.

"If it should become understood and realized by the voters that the home owners of Pittsburgh are afforded a direct annual saving of $2,800,000 by the operation of the graded tax law, and that the indirect saving to them, and to those who rent their homes, is much larger still, and that they will lose at least part of these great benefits by adopting a charter which does not contain such provisions, the defeat of such a charter at the polls would be practically certain."

tural and suburban classes and the granting of the bonus on buildings, the total area of the city as it existed in 1911 is now built up.

"The amendment under discussion inflicts the old rural, suburban, and urban classification upon the greater city and leaves open the question of the right to add a cross-division into land and buildings. The amendment also does something still more questionable. It requires that in cases of public improvements the assessment of the cost be upon the same basis as taxation, namely rural, suburban, and urban. The assessments upon various owners will not be equal according to location. There are three provisions in relation to taxation, all of which are reactionary: first, the return to the old classification based on location; second, the failure to extend the so-called graded tax provision to the greater city; and, third, the unequal assessment of benefits in public improvements."

So it was not merely a greater city plan that the various trade bodies have been endorsing but—doubtless without such intent—the repeal of the graded tax law. In fact, these bodies have gone on record for the extension of that law, and the Allied Boards of Trade are backing a bill to lower the rate on buildings still farther in proportion to the rate on land.

Knoxville and Carrick boroughs recently voted to join the city of Pittsburgh. The small home owner found he would have about $50 a year taxes by reason of the half-rate of millage on his house, a saving of ten mills on about $5,000 of assessed value. If the metropolitan plan goes through, he will lose this advantage for the benefit of the large areas of vacant land which will not only be assessed at one-third their value, but will have the millage reduced. In the city all property holders whose improvement value exceeds the land value will have their taxes raised.

And there will be very little consolation in being able to say, "Well, they had to change the map to do it."

EDITORIAL NOTE.—For a comprehensive discussion of Pittsburgh's graded tax plan, see article by Percy R. Williams, member, Pittsburgh Board of Assessors, 1922-1926, on "Pittsburgh's Progress in Tax Reform—Resulting in Tax Relief and Encouragement of Real Estate Improvement," in *The Kiwanis Magazine* for April, 1927.

Pittsburgh Plans the World's Most Complete Experiment in Federated City Government

By Thomas H. Reed

Director, Bureau of Government, University of Michigan

AFTER four years of labor, the Commission created in 1923 to study municipal consolidation in the Pittsburgh area has at last secured the second and final passage, by the Legislature of Pennsylvania, of a constitutional amendment authorizing the establishment of a Greater City of Pittsburgh coextensive with the present county of Allegheny. This amendment will be submitted to the people of the state in the fall of 1928. If they approve it—as seems highly probable—the Legislature of 1929 will be called upon to adopt a charter for the Greater City which in turn will be submitted to the double test of a majority vote in the county as a whole and a two-thirds majority in at least sixty-three of the existing cities, boroughs, and townships of the county. Pittsburgh will then assume the census status of one of the world's great cities, with a probable million and a half of inhabitants. It will become the world's largest city in area, 650 square miles, and will offer the most complete experiment ever tried in federated city government.

Metropolitan Government Combined with Municipal Home Rule

The amendment provides for the transfer to the new metropolitan government of all the powers of the county of Allegheny and of such ordinary municipal powers as are not left to the existing local government units of the county. These units are to be preserved with their present boundaries and forms of government as "municipal divisions" of the Greater Consolidated City with the "constitutional and legal capacity of municipal corporations." The amendment specifically reserves to them "the power to lay and collect taxes and to incur indebtedness"; the "power to own, construct, maintain, operate or contract for all kinds of public property, works, improvements, utilities or services, *which shall be within the municipal division and principally for the use and benefit of the inhabitants thereof*"*; the power to maintain local police and fire departments which may be supplemental to the police and fire departments of the consolidated city; and the power to determine, within the total allowed by the constitution, the proportions of debt-incurring power which shall belong to the municipal division and the Greater City. All other powers may, although they need not, be granted by the charter to the consolidated city. It is to be noted that the amendment does

* This does not include main traffic streets or trunk lines for sewers, power or water service serving more than one municipality.

not at all refer to education or authorize any change in the present system of school administration.

Obviously, the working-out of the adjustment of authority between the city and its divisions will require a very careful study of the whole governmental situation in the county of Allegheny. This, the Commission, which, on April 11, received from the Legislature a continuation of its powers, proposes to carry on with the aid of the best expert talent available. The terms of the amendment are happily broad enough so that they will not serve as a handicap to the adoption of the best policies which may present themselves with regard to the various problems involved.

Graded Tax Law and Special Assessments

This is particularly true with regard to finance. The amendment does not affect the existing laws with regard to assessment or taxation in the municipal divisions. The present City of Pittsburgh will continue, as a municipal division, with city powers, to be controlled in these matters by its own "graded tax law" which has attracted such wide attention. The amendment authorizes the Legislature to confer on the consolidated city the power of levying special assessments on the district plan which is not now enjoyed by Pennsylvania cities, thus opening the way to major improvements now impossible.

In connection with the making of special as-

THIS CIRCLE SHOWS THE TERRITORY WITHIN A TWENTY-MILE RADIUS OF THE CENTER OF PITTSBURGH. THE BOUNDARIES OF THE PROPOSED GREATER CITY (THE PRESENT COUNTY OF ALLEGHENY) ARE INDICATED BY THE HEAVY LINE

sessments, the amendment requires the classification of property into urban, suburban, and rural, upon the theory that different principles, with regard to the spread and the intensity of benefits conferred by an improvement, apply to the urban, suburban, and rural districts of the vast area included in the city, for, it must be remembered, we are not dealing with an ordinary city. It has been contended by some that, because of the wording of the section, this classification must be applied to assessment and taxation in general. Eminent legal opinion contradicts this assertion. Certainly no such result was intended. Assuming, however, that the classification of property as urban, suburban, and rural is required for ordinary tax purposes, there is ample ground for it in the diversity of the property in the 650 square miles of the new Pittsburgh. Otherwise, no limitations are placed on the Legislature with regard to assessment or taxation and the way is open to the adoption of the best system which the researches of the Commission and its experts may devise.

Benefits to the Pittsburgh Region

Apart from such questions of detail as must be patiently and scientifically worked out in the next two years, the amendment promises enormous benefits to Pittsburgh and its surrounding communities and valuable suggestions to students of municipal affairs everywhere. Instead of 124 separate cities, boroughs, and townships, now entirely independent, with no correlation in their efforts to meet problems truly common to the whole region, there will be a single regional government to care for common needs, and 124 units of local government with powers adequate to those needs which are particular rather than general, which powers include their own taxing and bonding power for local necessities. The Pittsburgh area, more than any other region, presents at once aspects of unity and diversity. The irregular surface of the ground has forced industry and population to follow the lines of the streams and valleys. They extend like the blood-vessels of a gigantic body over the whole district. But in between these threads of development are wide open spaces inevitably thinly populated. Each community is separate in a large degree from every other, with its own life, independence, ambitions—and, it must be admitted, prejudices. Nevertheless, they all center on the "golden triangle" at the junction of the two great rivers and have common problems of transportation, traffic, sanitation, health, flood control, etc. Every lover of progress should hail with joy this bold and far-reaching effort to reconcile and fit together the demands of regional government and local independence.

Engineers, Scientists, and the Public Service

IN an address at the opening dinner of the Public Service Institute held in March at the Massachusetts Institute of Technology, in Cambridge, and reported in *The Tech Engineering News*, Dr. Charles A. Beard, former Director of the New York Bureau of Municipal Research and the Training School for Public Service, laid down the following four propositions as to the relation of technology to civilization and government, and drew his conclusion therefrom:

"The first is that technology is the foundation of modern civilization, as the state is its retaining wall. Let the engineers and scientists quit, and the whole cultural order would revert to that of eighteenth century agriculture. In that case, electric lights would go out; water would cease to flow in the pipes; silence would fall upon the humming telegraph wires; the printing press would sink down into rust; yellow fever, cholera, smallpox, and bubonic plagues would fill our avenues with the specters of death. Then where would the great and wise stand—the puissant bankers, editors, preachers, jurists, and highbrows generally?

"My second proposition is that technology is a new factor in civilization, now at the beginning of its career, an irrestistibly dynamic factor which under the drive of business enterprise and the popular demand for comfort, safety, and convenience will hurl into society one epoch-making invention after another, changing, rearranging, and challenging the state, throwing upon it ever increasing burdens, calling upon it for ever more complicated services, straining its creative and administrative energies to the limits of human capacity—and beyond.

"My third proposition is that technology has already turned the state of our ancestors upside down, transforming it from a police state into a service state. For example, there are in the United States at least ten times as many civilian servants as there are soldiers; the city of New York has only fourteen thousand policemen protecting life and property by force, while more than one hundred thousand civilian employees serve it in the discharge of community functions.

"My fourth proposition is that nothing under heaven can stop the inexorable march of this modern Cyclops, technology; that, on the contrary, it is the high and appointed servant of that noblest concept of the human mind, namely, the subjugation of the material universe to the welfare of humanity, and will march from triumph to triumph in the coming centuries.

* * *

"And the upshot of it all I now desire to put in a single proposition: The study of the state, its functions, its role in civilization, its relation to national grandeur and destiny, is as worthy of our labors as the study of technology, and deserves an endowment and equipment equal in proportions, deserves the consideration of minds equal in capacity, and calls for the same kind of scientific approach that has made invention the glory of our country."

East Cleveland Speeds Up Traffic With Light

By Carl E. Egeler and D. C. Young

IT is not a "lucky break" which permits motorists to drive along the 2½-mile section of Euclid Avenue in the city of East Cleveland without being stopped by any of the signal lights. The signals are timed in such manner as to permit through movement at a uniform speed of about 23 miles per hour. The installation of this new progressive system was made under the direction of the East Cleveland city officials, C. H. Carran, City Manager, and M. W. Garnett, City Engineer. The Engineering Department of the National Lamp Works prepared for them specifications covering the optical design and position of the signals, and the scheme for their operation to insure continuous movement of a maximum amount of motor vehicle, street-car and pedestrian traffic.

Last year, Euclid Avenue was widened to 64

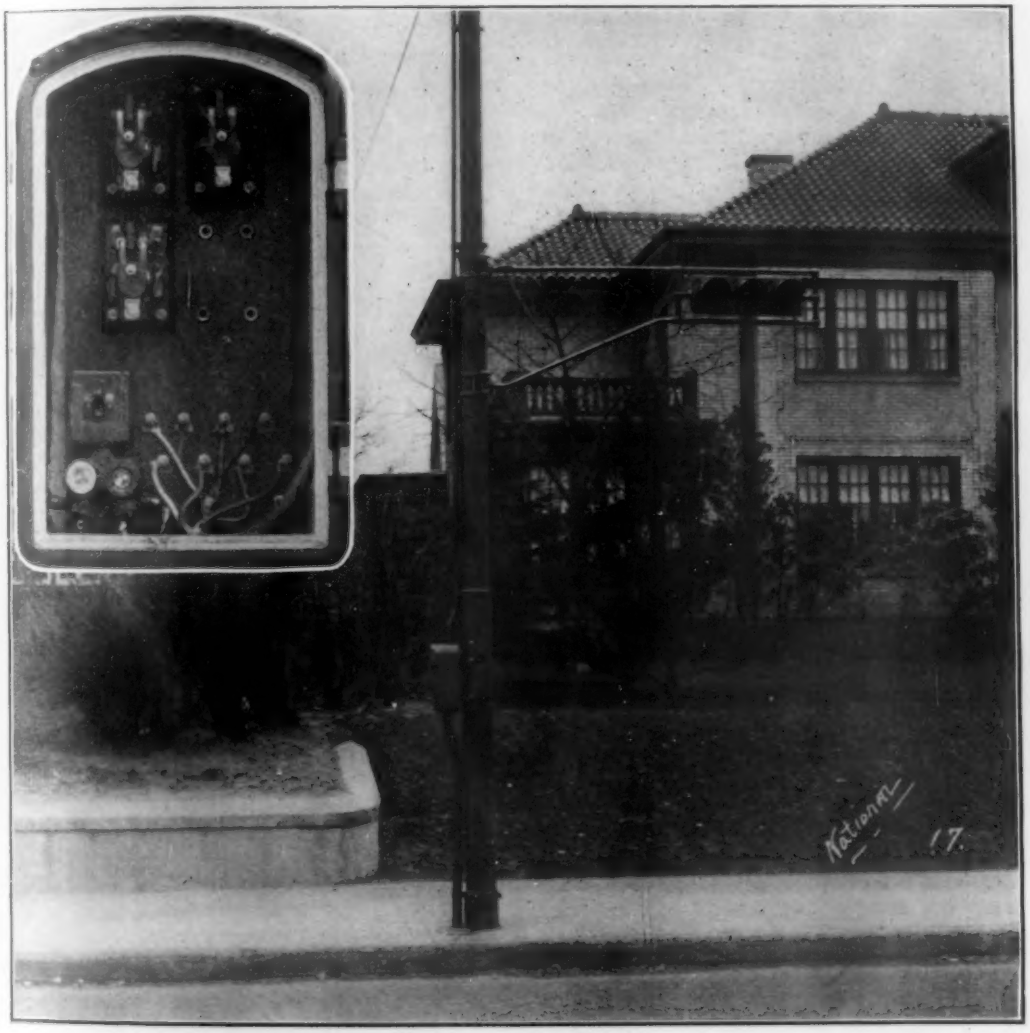


FIG. 1.—EAST CLEVELAND BRACKET SIGNAL MOUNTED OPPOSITE OFFSET CROSS-STREET, AND REMOTE CONTROL RELAY BOX

The interior of the box is shown in the inset

FIG. 2.—METHOD OF TWO MOUNTING SIGNALS ON TROLLEY POST AT OFFSET INTERSECTION

feet from curb to curb, a step made necessary by the ever increasing amount of vehicular traffic. The problem before widening was one not only of providing adequate street surface but of using it to the best advantage once it became available, and the city officials determined to utilize the enormous possibilities of traffic control with modern color light signals and a progressive form of control. Obviously, by keeping traffic in motion, even though in waves, the maximum use is made of the street area.

Another problem arising from the widening of the avenue, and foreseen by the city officials, was that of providing for the safety of pedestrians and street-car passengers. With the proper location and design of the traffic signals, the pedestrian's safety at the important intersections could be insured, and by installing raised safety zones, the passengers waiting for and alighting from street cars would be protected.

Traffic Signal Location, Mounting and Design

In selecting the type and location of signals for the system, several complicating factors had to be kept in mind: some of the streets cross at odd angles; several corners are of the "T" or dead-end type; left turns are necessary at practically all crossings; and double car tracks are located along Euclid Avenue. The signal most plainly visible at all times, both to straight-ahead and turning traffic, the one least obstructed by street cars and most accessible for repairs and maintenance, was found to be the bracket type, mounted about 15 feet high on posts at the far corner of the intersection.

For vehicles stopped at the curb line, the bracket signal can be most conveniently viewed, because the angle of the signal above the horizontal is only about half that obtaining for the center suspension signal. In addition, the driver waiting to make a left-hand turn has only to look in the direction in which he wishes to go to see the signal; it is at a low angle, and does not require the opening of the door or the driver's sticking his head part-way out of the car to obtain the indication.

On account of the fact that both the horizontal and the vertical angles through which light must be sent are smaller for the bracket mounting than for other suspended signals, a brighter and more commanding signal can be obtained for a given lamp wattage. Obviously, the greater the angles through which light must be sent, the lower will be the brightness or effectiveness for a given lamp.

The signals have the standard three colors—red, green, and amber (amber overlap)—with a 60-watt traffic signal lamp and mirrored glass parabolic reflector back of each lens. Lenses

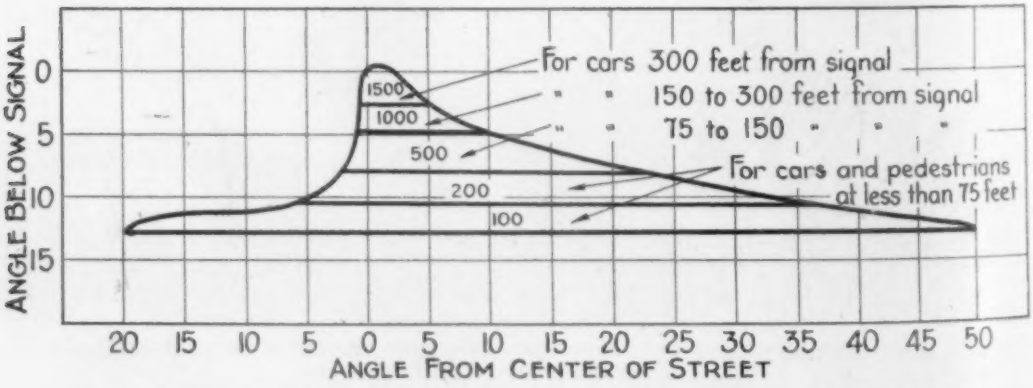


FIG. 3.—MINIMUM CANDLEPOWER SPECIFICATIONS FOR 8-INCH LENS BRACKET SIGNAL

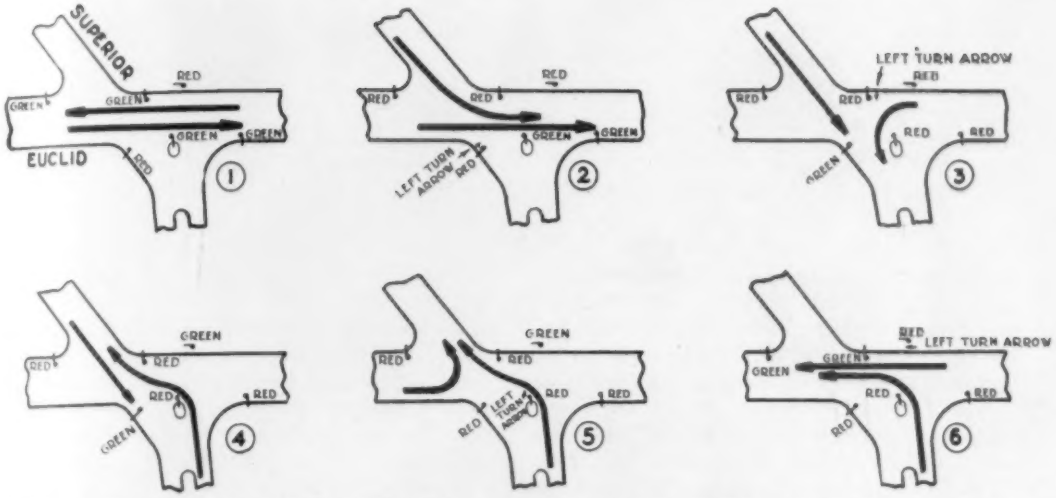


FIG. 4.—SEQUENCE OF TRAFFIC MOVEMENT AT EUCLID-SUPERIOR INTERSECTION, EAST CLEVELAND

of an improved directional type, which distribute most of the light through the required horizontal angles and into the useful zones below the level of the signal, are employed. The highest candlepower values are furnished in the direction of the center of the street toward drivers some 300 feet away. As the signal is approached, lower values suffice. The recommended candlepower values for effective signals installed on a wide street, for various distances of observation, are shown in Fig. 3; they were used as a basis for the purchase specifications, and are met or exceeded by the signals with the 60-watt traffic signal lamps. East Cleveland was the first to incorporate complete lighting specifications in the purchase contract for signals, thus providing an outstanding factor in averting accidents due to misinterpretation or slow comprehension of the signal. The signals are of Harrington-Seaberg make.

Provision for Left Turns

Where it is not possible to eliminate left turns, provision for such movement with least confusion and delay to all traffic is often a problem. It was found that at the Superior-Euclid intersection the left turn must be provided for in all directions, and that the time required for two of the turns was about equal to that for through movement. Since these two lanes of turning traffic must cross, only one could be permitted to move at a time, thus doubling the time of total cycle. This, of course, would cause delay and dissatisfaction. A scheme was devised whereby the eastbound traffic is not started simultaneously with the westbound, and a lane of left-turning traffic is added to the lane of through traffic first established, say the eastbound, and later left-turning traffic is added to the westbound lane. Therefore it was possible to give all the time necessary for left turns without increasing the normal time for through traffic movement or handicapping it in any way. The scheme is shown diagramatically in Fig. 4. Traffic turning to the left at this intersection is directed by an additional signal mounted below the regular unit, Fig. 5. The three lenses are green, and flash simultaneously, displaying a green arrow in black outline pointing in the direction

FIG. 5.—LEFT-TURN SIGNAL AT EUCLID-SUPERIOR INTERSECTION

in which the turn is to be made, with the word "Left Turn."

Left turns are made at other intersections by traffic pulling to the right on the green signal, and turning on the "go" signal for the cross-street.

Signal Timing for Progressive Traffic Movement

Along Euclid Avenue, signals are installed at sixteen irregularly spaced intersections. The problem of control, therefore, was the determination of a timing scheme which would keep the maximum amount of through traffic in motion, and at definite intervals provide for cross-movement and left turns. At the same time, street-car operation was considered, and a signal timing was devised which would least interfere with their free movement. The Cleveland Railway Company cooperated heartily in furnishing car schedules and other pertinent information.

Preliminary to working out a timing schedule, a traffic study was made at each important intersection to determine the proper intervals of "stop" and "go." A schedule of street-car movements was also obtained. With so many variables to be considered in developing a signal timing to permit uninterrupted movement of through traffic, it was found feasible to work with a time-distance chart of the slide-rule type, Fig. 6. Having determined by time study and estimate the proper intervals of "stop" and "go" for each intersection, narrow strips of cardboard were marked accordingly; that is, the solid line indicating "stop," the space "go," to a horizontal scale of time (in minutes).

By spacing the lines on each strip vertically in proportion to the distance between intersections, it is possible, by means of a transparent straight edge, to adjust each strip of cardboard so that a "go" will precede the arrival at each intersection of a vehicle moving at any desired uniform speed. Thus, the diagonal lines show (in this chart) continuous movement in both directions at 20 miles per hour. While it is a simple matter to set signals for theoretically perfect progression in one direction, the difficulty comes in providing for free movement in the opposite direction with the "go" indications at each intersection showing for both directions at the same time. It is in this respect that the chart becomes especially useful. Also, it is indispensable where two different speeds of movement, such as for automobiles and for street cars, are to be considered in the timing scheme.

As can be seen on the chart, by projection to either the top or the bottom the proper setting of the signal at each intersection with respect to any zero time can be obtained. As is often the case, to obtain the best timing for all intersections, some re-arrangement of the intervals of "stop" and "go" is necessary. In this respect the chart is again a time-saver.

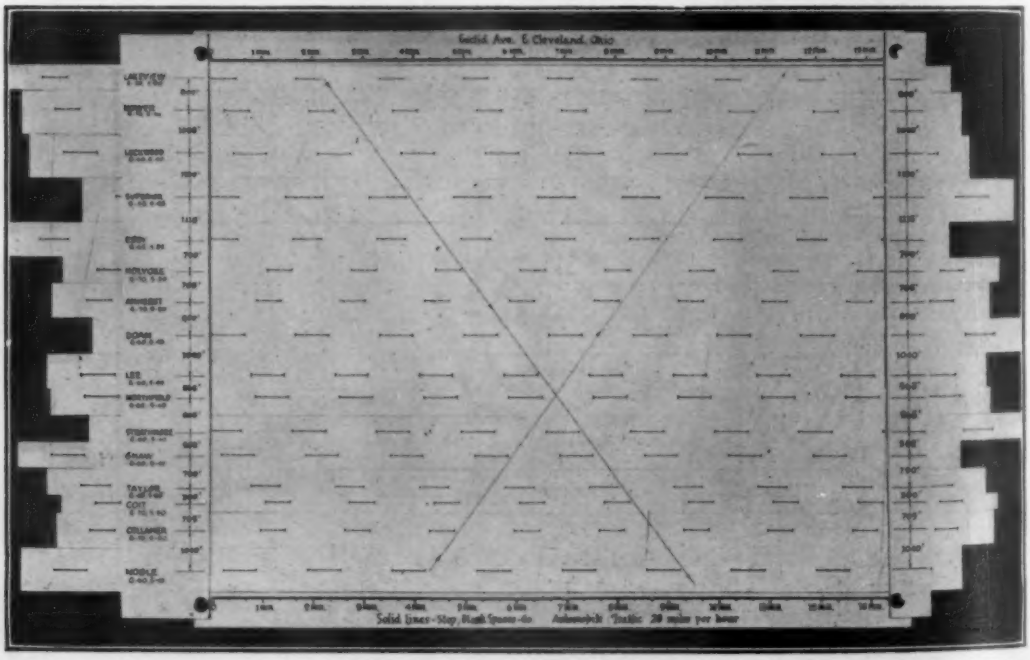


FIG. 6.—SLIDE-RULE CHART WHICH SIMPLIFIES DETERMINING OF TIMING FOR PROGRESSIVE TRAFFIC CONTROL SYSTEM

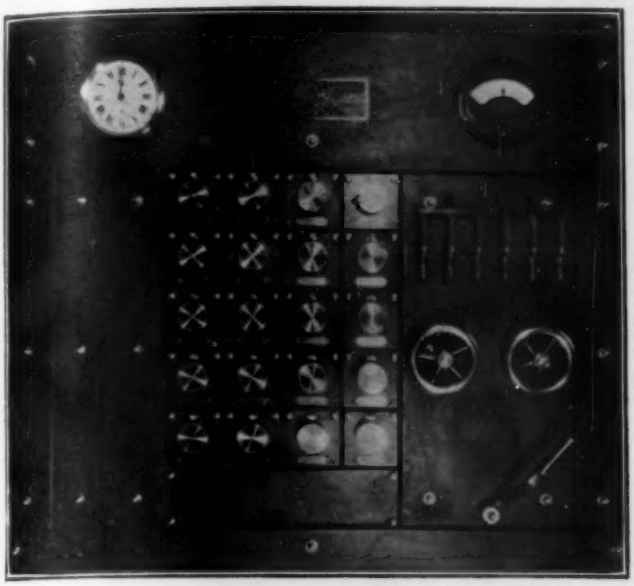


FIG. 7.—MASTER CONTROL MECHANISM LOCATED IN CITY HALL
A separate dial provides control of signals at each intersection

Control Apparatus

The signals are all electrically controlled from a central point, by a control apparatus located in the City Hall about equidistant from each end of Euclid Avenue within the corporate limits.

A No. 10 common and three No. 18 individual control wires in 4-inch underground fiber duct are run to each intersection, where three relays connect the signal lamp to a local power supply. Therefore, only a low-value relay energizing current is carried by the control wires. Four ducts were laid, two being occupied by traffic signal, police signal, and safety zone control cables, and two as a reserve for future use.

On the control board there is a contactor mechanism (Fig. 7) for the signals at each intersection, which permits setting the times for "go" and "stop" independently. With such mechanism it is possible and easy to set or re-arrange the timing schedule to give the best results. The re-arrangement is made from two to four times a day, according to the degree of congestion and the predominant direction of traffic movement.

Raised Safety Zones

A concrete platform 6 inches high, 4 feet wide, and 70 feet long, is installed as a safety zone at each car stop (Fig. 8). At the approach end, a heavy concrete abutment has been erected. Such a collision hazard in the street must be properly illuminated and marked in order to be what it is called—a place of safety—and not a danger to the innocent but thoughtless motorist. On top of the abutment are two amber warning units employing 25-watt standard lamps with "spreadlite" type Fresnel lenses. Two units are employed to insure continuance of a warning signal when one lamp burns out. Directly above the abutment, about 10 feet high, is a combination lighting and warning unit. The warning lens is of the cylindrical Fresnel type, for which a 60-watt standard lamp is specified. In the bottom of the housing is a clear glass Fresnel lens which receives light from a 100-watt standard lamp and projects it on the abutment.

At the far end of the platform (flat end) a 150-watt lighting unit is placed to direct a flood of light downward. This serves not only as a convenience to passengers but to keep vehicles from driving over the end of the island.

Less Speeding as a Result

The city officials find that little speeding takes place with the new signal system, since motorists soon learn that it only brings them to a "stop" indication instead of a "go," as would be the case if they proceeded at the normal speed. Pedestrians and motorists now can cross Euclid Avenue with little delay and danger.

FIG. 8.—LIGHTED SAFETY ISLAND, EAST CLEVELAND

A Suggested Fireworks Ordinance

An Ordinance Prohibiting the Discharge or Firing of Fireworks and Other Pyrotechnic Display and to Limit Their Storage

Be it ordained by .....of the city of ..... as follows:

Section No. 1. The discharge, firing or use of all firecrackers, rockets, torpedoes, roman candles, fire balloons, or other fireworks or substances designed and intended for pyrotechnic display, and of all pistols, canes, cannons, or other appliances, using blank cartridges or caps containing chlorate of potash mixture, is hereby prohibited. Provided that the .....may order the public display of fireworks by properly qualified individuals under the direct supervision of experts in the handling of fireworks. Provided also that such display or displays shall be of such a character and so located, discharged or fired as, in the opinion of the chief of the fire department, shall not be hazardous to surrounding property or endanger any person or persons.

Section No. 2. The sale of fireworks at retail is prohibited.

Section No. 3. The storage or sale of fireworks at wholesale is prohibited, except by permit from the ..... issued for a period of one year. Application for permit must be filed with the chief of the fire department at least 30 days previous to the issuing of the permit and must give detailed description of the proposed care and storage of said materials and of the structural conditions and occupancies of the building.

Section No. 4. Permits may be issued only after an inspection of the premises by the chief of the fire department or his authorized agent, who shall file with the mayor and fire department a certificate of approval or his disapproval and reasons therefor.

Section No. 5. Any person, firm or corporation violating any of the provisions of this ordinance as regards the storage and sale of fireworks shall be deemed guilty of a misdemeanor and be fined not less than ten dollars ($10.00) nor more than twenty-five dollars ($25.00) for each day's neglect of compliance. Provided also that violation of other sections of this ordinance shall be considered a misdemeanor punishable by a fine not exceeding ten dollars ($10.00).

The chief of the fire department may, at his discretion, remove or have removed, at the owner's expense, all stocks of fireworks or other combustible exposed for sale, or held in stock in violation of this ordinance.

Section No. 6. The chief of the fire department shall direct such fire appliances as in his judgment may be necessary for the premises, and he shall see that two or more persons are instructed in their use, and as to the best means of getting fire-alarms to the fire department.

Section No. 7. All ordinances and parts of ordinances inconsistent herewith are hereby repealed.

Section No. 8. This ordinance shall take effect and be in force from and after its passage and legal publication.

ALTHOUGH the campaign of the National Fire Protection Association for a Safe and Sane Fourth of July hns resulted in some abatement of the loss of life from Independence Day celebrations, the annual fire losses due to fireworks and firecrackers continue to be disgracefully high. The figures of the National Board of Fire Underwriters for the last four years available (the 1926 figures being not yet published) are:

1922.....	$775,205	1924.....	$904,825
1923.....	639,131	1925.....	829,613

These figures the National Board considers to represent only 80 per cent of actual losses.

In its bulletin containing the suggested fireworks ordinance, printed above, the N. F. P. A. says:

"It is, perhaps, too much to expect a complete return to sanity; but some effort at least may be made by all cities and towns toward leading their people into more moderate and more intelligent forms of celebration. If explosives must be used, the authorities can limit their use to public parks during certain hours of the day, thus limiting the danger of injuring other people or destroying property by fire. The firing-off of explosives among the closely built shingle-roofed frame houses which compose the greater part of our cities is wholly in accord with the reckless spirit of Americans regarding fire.

"If before every Fourth of July all cities and towns were given a thorough cleaning of rubbish, and all use of explosives then restricted as to time and place, the police and public wardens might have at least a fighting chance to minimize the disastrous results of our public folly during the years it may require to inspire in our people a desire for a rational kind of celebration. And such a desire must be inspired. It is the duty of every city to arrange for its people suitable amusements or exercises definitely calculated to educate them in a rational observance of this historic holiday. Habits of folly can be most easily eliminated by a substitution of something better. The things a city can do to interest its citizens in a sane and wholesome celebration are unlimited, and the municipalities which in the past years have taken steps in this direction are already receiving national praise for their wisdom and their high sense of civic responsibility."

THE FOURTH OF JULY IS COMING

Is your city ready with a fireworks ordinance under which sanity can be patriotic?

THE OLD WAY

An annual orgy of noise and death and fire

Drawings prepared for THE AMERICAN CITY *by* MORRIS

THE NEW WAY

Public celebrations in parks and open spaces under municipal supervision

Study and Extension of the Distribution Systems of Water-Works

By Laurence C. Hough

DISTRIBUTION system are rarely ever designed. Much thought and work have been expended upon the collection of water, its purification, and its delivery to the vicinity of the centers of population, but there the intensive study of the subject seems to have languished. These items involve the expenditure of large sums of money in a short time. Ample provision for future growth is made in capacity, and large capital expenditure is completed for a generation. It is only in cities of very rapid expansion, like Los Angeles and Detroit, where anything like a comprehensive plan of the distribution system is developed and carried out. The purpose of this discussion is to point out the economic need of systematic development.

The original water system in a given community usually consisted of a line of small main leading from a pump or pond down the main street and past most of the houses. As the village grew, branches were constructed from the main line, and soon a "tree system" of dead ends was formed. Gradually these were connected up and the grid thus evolved. As Bill Jones or Tom Smith built a new house and "wanted water," the main nearest him was extended. Sooner or later the grid of 4- or 6-inch pipe became overloaded, and a larger main was needed to maintain pressure. Thus the trunk main appeared. Too often these trunk mains followed paving jobs. A street was to be repaved and a larger pipe was put in to obviate the necessity of future breaking of the street surface. Usually the 4- or 6-inch main was replaced with an 8- or 12-inch without serious regard to the probable future demand upon it.

What Waste Surveys Have Brought to Light

Our waste investigations during the past thirty years throughout the United States and Canada have brought to light many interesting data on the behavior of trunk mains, and point to the necessity of careful study in their design and maintenance. A few examples will illustrate the point:

(1) In one city in the state of New York, there was a reduction in pressure during the daylight hours. To remedy this, a new 20-inch main was laid from the source of supply through the heart of the city. Contrary to expectations, the pressure situation remained unchanged. Numerous tests were made, but the trouble could not be located. After heated recriminations, the matter simmered down and the job was charged up to profit and loss.

In 1924 during a water-waste survey, two 20-inch gates were found closed. When these were opened, much desired pressure was immediately obtained. Evidently all gates had been closed for a final pressure test of the line when it was laid. After the test, apparently all the gates had been opened except the 20-inch gates which fed the city. Why? Nobody knows. That was several years ago. The point is that a perfectly good 9,000 or 10,000 feet of 20-inch main, representing an investment of $50,000 to $75,000, lay idle in the ground for several years and did the work of a 6- or 8-inch distribution main.

(2) In Baltimore, a 48-inch main was found to have reversals of flow during the day, where one direction was normally expected.

(3) In Toledo, a 30-inch main had been proposed to supply water to a point where the fire supply was deficient. There was already a 30-inch loop from the pumping-station and from a 36-inch conduit feeding the business center of the city. Our trunk main survey disclosed the fact that the water was feeding all the way back through the 30-inch loop to the business center. It was found that when the proposed new plant is put into operation, the present 30-inch loop can be placed in full operation and the proposed 30-inch main will be unnecessary. The saving in this case amounted to almost a quarter of a million dollars, which would otherwise have been buried, with no particular advantage to the system.

(4) In Trenton, N. J., a 20-inch main was proposed to feed a certain section which apparently was inadequately supplied. A trunk main survey and distribution study based thereon showed that this main would not accomplish the result desired, and the saving of its cost amounted to $40,000.

(5) In Harrisonburg, Va., some 14 miles of 10-inch main brings water from a mountain stream to the town. Here the surplus not used flowed into a small reservoir, which alternately filled at night and lowered in the daytime. As

the demand for water grew to exceed the capacity of the supply main, a booster pump was installed at the town limits to maintain pressure. This pump was operated about twelve hours, from 7 A. M. to 7 P. M. It was found that when the pump was started the flow at that point was immediately increased by the capacity of the pump. Within two hours, however, the rate had slumped off to only 10 per cent over the normal gravity flow. When the switch was pulled and the pump stopped, the water would flow backward toward the mountain, actually reversing the motion of the pump for several minutes.

(6) In one Massachusetts town, the supply is pumped through some fifteen miles of force main varying in size from 20- to 8-inch. The standpipe on the far end would not fill, and it was proposed to lay 1½ miles of 24-inch main to reduce the friction. But before doing this they decided to investigate.

First, they constructed a theoretical profile of the hydraulic grade line, using the Hazen and Williams tables for the known age of the various lengths of various sizes. Then the elevation of the hydraulic grade was measured at each change of size in the main, and the actual profile was obtained. The two curves were found to be practically parallel except in one short stretch of some 800 feet of main. Here the slope went skyward. By spending about $300 to clean this stretch, the friction was brought down to normal, and this mile and a half of 24-inch main is not even thought of at present.

Laws Prevent Profits from Municipal Plants

Most state laws provide that no profit shall be made through the sale of water by municipal plants. In the frenzy to give water at the lowest possible rate, only maintenance costs are used, and no provision is made for depreciation. Sinking-funds may be maintained to retire the bonds when they mature, but there is no reserve fund to retire the physical plant when it matures. Consequently, large sums must be spent at intervals to rehabilitate the distribution system. This custom is facilitated by the relative ease with which municipal bonds can be marketed.

Legitimate Planning Ahead

A better plan is to put down on paper what extension and improvements will probably be needed in the future, estimate their cost, and set aside each year a portion of this amount, then actually lay a portion of the mains called for by the plan. Too often a department will attempt to lay up a fund for extensions. But as soon as the credit balance with the city treasurer builds up to a sizable figure, the eagle eye of some political sage lights upon it, and you may trust him to find some way to get at this money and spend it on a new fire-station or such. The writer has in mind one town where the bonds of the new city hall are being retired almost entirely by the annual so-called "surplus" of the Water Department; and another where certain park areas were turned over to the water-works for maintenance, simply to use up its depreciation fund. The point is to put this money underground where it cannot be reached. The problem of the water-works superintendent then resolves itself into how best to "salt away" his surplus so that in the future years it may best serve the community.

The distribution system contains two major elements: (1) the *trunk mains,* which, except in the case of very large cities, may be taken as mains of 12-inch diameter and larger; and (2) the *distribution grid* of 4-, 6-, 8-, and 10-inch mains.

The accepted layout of trunk mains seems to be the loop, encircling the high-value area and with numerous cross-connections.

Population Studies

Predicting future growth is always a hazardous undertaking, especially in these days of rapidly shifting centers of population. The more one deals with statistics on population, the less reliable they appear. Data on population can be obtained from many sources, such as Federal and state census, school census, the data from gas and electric companies, the lists of registered voters, etc. The only way to arrive at a reasonable prediction seems to be to plot all available data on one sheet of paper, and then use your best judgment. Intensive study is best made by wards. In some cities, ward lines are changed periodically for political expediency, but usually they are relatively constant.

Future growth in each ward depends on many things; for example, topography and geology, rail facilities, and zoning ordinances. Data on trend of development can also be obtained from boards of trade, investment bankers, retail trade associations, etc. The automobile has made possible the development of outlying districts heretofore relatively inaccessible, and it would seem that the general movement of population has passed the highly centraliezd stage and is expanding toward the suburbs. Probably twenty-five years is as far ahead as it is safe to try to predict. Even this short period is hazardous in New England and the Maritime Provinces, where population seems to be definitely decreasing.

Future Demand for Water

For each ward, then, a forecast of probable growth in population can be made. Next comes the probable demand for water. Per capita consumption varies greatly with the quality of the water, class of consumers. type of consumers, and pressure. In general, per capitas are on the increase. George A. Carpenter, City Engineer, Pawtucket, R. I., has made interesting studies on the actual use of water in tenement districts, and finds rates extending from 12 to 20 gallons per capita for this class of consumer. These are actual meter readings and include the house waste.

For ordinary dwellings, the actual consumption may be taken at 30 gallons per capita and 50 gallons for the higher class. These may be doubled to care for ordinary waste and 5 gallons per capita added for public uses, such as fires, fountains, street-sprinklings, etc. This gives the probable domestic demand for water. Industrial demand is always problematical and can only be estimated. The fire demands are definitely prescribed by the underwriters. Assuming the maximum domestic and industrial demand to be 50 per cent greater than the average and to coincide in time with a major conflagration, the maximum probable demand for water in the ward at any time is obtained. It is also very helpful to isolate a ward and measure directly with pitometers its present water consumption.

Study Existing Facilities

Our attention is next turned to the existing facilities. In our work we first measure the normal flow in each trunk and then determine its coefficient of friction, that is, the value of "C" in the Chezy formula. In a few instances this may be done with a U-tube and long lines of connecting hose. A better method is to measure the loss of head directly in as long a stretch as possible. Frequently we make a measurement on 10,000 feet of main, thereby including the valves, branches, and bends, which have some slight effect on the total loss. The method is essentially as follows:

The section of main to be tested is isolated by closing-off the side connections, thus insuring the same flow throughout the entire section. The main is then tapped at both ends with standard 1-inch corporation cocks, and simultaneous pitometer measurements are made of the flow into and out of the section. Any discrepancy between these two measurements indicates either leakage or an open connection between the two pitometers, and this must be remedied before further work can be done. The flow being substantially the same at both ends of the main, recording pressure gages are attached and simultaneous records of both flow and pressure are made for a period of half an hour or more. The gages used were developed especially for this work. They have circular charts revolved by clockwork once in every four hours. They are made to record three ranges of pressure: from 0 to 150 feet of head; from 150 to 300 feet; and from 300 to 450 feet. They are calibrated so that a pressure increase of 10-foot head will produce a pen movement of ⅓-inch on any gage. The ruling of the chart is such that the pressure may be read directly to ½-foot of water, and by comparing the charts made at the two ends of the main and selecting ten or more peaks and valleys from the record, an average loss of head is obtained accurate to 1/10 of a foot. Usually a needle valve must be used on each instrument to eliminate surges. The loss indicated by the two gages must be corrected by the difference in elevation of the two stations, and from this true loss of head, the length of main, and mean velocity, the coefficient of friction may be calculated. These coefficients vary widely with the quality of the water. In Springfield, Ohio, with hard water, values of "C" of 120 are found for mains twenty to forty years old; while in Baltimore, with soft water, mains of the same age showed values of 70 or even less. Coefficients as low as 44 were noted here.

Thus we obtain information as to the local pipe characteristics, and can forecast the probable coefficients during the next 25-year period.

Strengthening the Weak Spots

Having then the information regarding population, per capita consumption, maximum flow, and pipe coefficients, it only remains to determine what size mains will be needed to handle the maximum demand, and where to put them. By inspection of existing maps, the weakest spot in the ward is selected and the maximum flow assumed for that point. By using the Freeman graphical analysis, the resulting pressure is readily computed, and if it is deficient, the necessary pipe sizes are determined. Enough other points are chosen to insure ample supply for the entire area. The location of new trunk mains will necessarily depend upon local geology, condition of pavements, location of large consumers, projected highways and improvements, etc. The grid system usually takes care of itself; a minimum of 6 inches in residential districts and 8 inches in thickly settled sections is advisable, but the location and size of the trunk main are important.

It next becomes necessary to be sure that each ward will receive its maximum without

injury to the pressure in other parts of the city. Here again the Freeman graphical method is of great help and indicates where reinforcements or new loops will be needed. In cities it is customary to assume two major conflagrations occurring at one time, and to design accordingly.

Once these new mains are decided upon, they may all be put on one sheet and their relative importance determined, together with relative cost. A schedule is then drawn up, preferably in five-year periods, and a definite amount of work assigned to each period. This schedule is a guide, and not a rigid rule. It may be advanced or retarded to meet conditions. In this the price of pipe and labor, and the surplus available, are the controlling factors. The principal idea is to have a definite program in mind, and work to it. It should be an item in the annual budget as essential as "payrolls" and adhered to as strictly as "meter repairs." Like life insurance, it may seem like burying money, but in the long run will repay itself many times over.

ACKNOWLEDGMENT.—From a paper read before the New England Water Works Association.

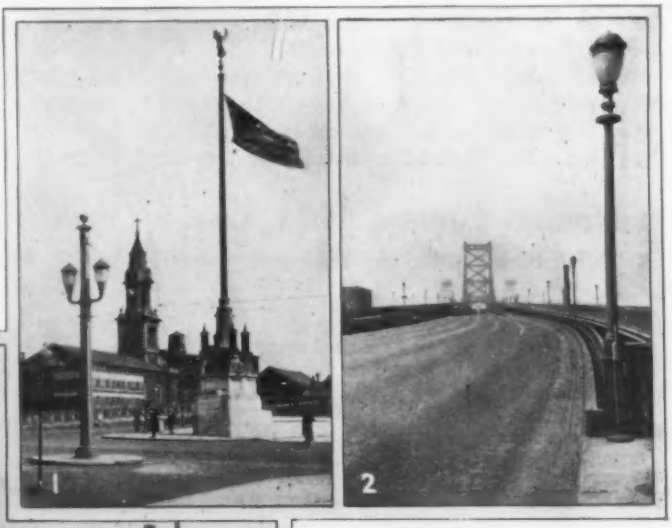
Lighting the Largest Suspension Bridge

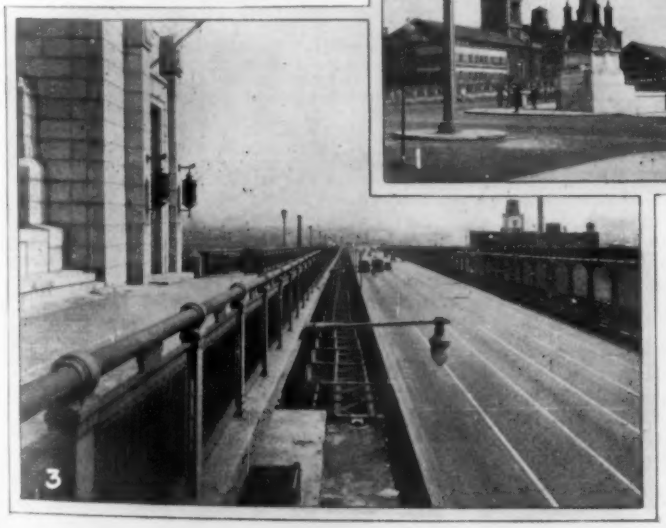
By H. E. Lippman

AS described in THE AMERICAN CITY for July, 1926, the world's longest suspension bridge—the Philadelphia-Camden structure, opened to the public on Independence Day last year—has a main span 1,750 feet long and two shore spans each 751 feet 8 inches long. Including the approaches, the entire length is nearly two miles.

The floor is 125½ feet wide over-all, given over to six lanes for vehicular traffic 57 feet in width, two trolley-car and two rapid-transit lines, the latter being carried on cantilever extensions of the floor beams. Above each of the latter extensions are cantilever extensions at the top of the posts of the trusses, each providing a 10-foot sidewalk.

Realizing the importance of adequate illumination in making both vehicular and pedestrian traffic safe at night on this great structure, the Delaware River Bridge Joint Commission issued specifications under a separate contract for electrical equipment, including lighting units, standards, brackets, and control equipment. The lighting equipment used on





1. The Philadelphia approach of the Delaware River suspension bridge, showing part of the plaza lighting units and the pylon lighting units
2. The Camden approach of the bridge, showing the roadway and footwalk lighting units
3. Looking toward the Camden approach of the bridge, showing in the foreground the type of units used to illuminate the roadway on the main span of the bridge

the bridge and approaches was designed by Paul P. Cret, the official architect of the Commission, and was manufactured by the Westinghouse Electric and Manufacturing Company, together with the regulators, transformers, and control equipment.

The necessary control apparatus and transformers are located in the anchorages at either end of the bridge. The two services on the Philadelphia side are each 2,300-volt, 60-cycle, 2-phase, 3-wire, and on the Camden side 2,300/4,000-volt, 60-cycle, 3-phase, 4-wire. To either of these services may be connected the power and lighting transformers, which reduce the voltage to 115/230 volts for the operation of the elevators in the main towers of the bridge and for the multiple lighting used in the anchorage and tower, for the red and green channel lights and to the receptacles located at intervals along the main span of the bridge. For the emergency supply of lighting, arrangements are made so that the lights can be operated from the power transformers in case the lighting transformers must be removed from service.

For the supply of roadway and footwalk lighting on the bridge and approaches, the units shown in the accompanying photographs are used. The main roadway is illuminated by the pendant units seen in the foreground of Fig. 2, of which there are 60 in number, equipped with the Westinghouse-Holophane Bi-lux refractor. The purpose of the refractors is to redirect the light of the lamp, which would normally be emitted upward and to the rear of the unit where it becomes a total loss, to the surface of the roadway where it is most effective. As a matter of fact, a bridge is an ideal location for this type of refractor, since the light which goes upward and over the sides of the bridge is a total loss. The approaches and plazas on either end of the bridge are illuminated by the units shown in Figs. 1 and 3, known as the Giant Paragon, which are also equipped with Bi-lux refractors. The footwalks above the roadway are also illuminated with this type of unit, but without refractors. A total of 245 Giant Paragon units are installed. In addition to these, 31 of the standard Westinghouse Multilux streethoods are installed under the approaches of the bridge.

The lamps used in the roadway and footwalk lighting units vary in size from 400 candlepower to 1,000 candlepower. Power is furnished by eight 20-kw. subway type constant-current transformers, four being located in the transformer rooms in each anchorage. These transformers are similar to those used for series street-lighting circuits, transforming from constant potential at 2,300 volts to constant current at 6.6 amperes. In order to change the supply current from 6.6 amperes to 15 or 20 amperes, the current required by the lamps, individual transformers, or safety coils, are installed at each lighting unit. The circuits to the lighting units are arranged in such a manner that in case the power supply to the constant-current transformers in either of the anchorages fails, all the roadway and footwalk lights on the near approach and only half the lights on the remainder of the bridge are out.

Holmes County, Ohio, Lost in Redistricting, Wants Statehood

UNDER the possibly significant date of April First, the Associated Press issued a dispatch from Columbus, state capital of Ohio, to the effect that because the State Senate accidentally voted to exclude Holmes County from any Congressional district, in a redistricting act, the residents have petitioned the Legislature to be made a separate state.

This action brings to mind the somewhat more serious move on the part of the Chicago City Council on June 24, 1925, looking toward the separation of the city of Chicago from the state of Illinois.* The same thought has been occasionally expressed unofficially with respect to New York City—involving in some forms the inclusion of the metropolitan portion of New Jersey along with New York City, in a new state. A local news account of the Holmes County incident says of still another metropolitan region, "'We've been trying to get Cuyahoga County to secede for some time, and now Holmes County has beat us to it!' sobbed Clevelanders in the house, rushing out to prepare amendments to the gerrymander bill to erase Cuyahoga County's name too."

The text of the petition is as follows:

"To the Most Honorable and Erudite Assembly of the State of Ohio, petition: We, the undersigned citizens of the great commonwealth of Holmes County, America, hereby petition your most honorable body as follows:

"Whereas, you, in your great wisdom and foresight have seen fit to recognize the fact that Holmes County is so far advanced and has progressed to such a point that it no longer needs the counsel and assistance of neighboring counties nor the great commonwealth of Ohio in the solemn task of electing a representative to the National Congress or otherwise, and that in the science of government and stanchness of democracy it stands alone—

"For which we thank you, and

"Whereas, we, while not boasting of these facts, are willing to accept the compliments and to undertake the great responsibility that throughout the ages has devolved upon sovereign states,

"We, therefore, demand that your honorable body be consistent and create out of Holmes County a free and independent state to be known hereafter as 'Holmes County, America,' which shall forever be the home of liberty, geographical intelligence and Democrats.

"Signed by Carl Schuler, Mayor of Millersburg and President Pro Tem. of the proposed state, and 10,000 other signers (all Democrats)."

Evidently Holmes County, America, would be a model state from the standpoint of getting out the vote, for Millersburg, the county-seat—or capital, we should say—is credited in the 1920 Federal Census with a population of 2,098 and the county altogether with 16,965, as compared with which an aggregation of 10,000 stanch Democrats constitutes a very respectable percentage.

*See THE AMERICAN CITY for August, 1925, page 127.

How Non-Stop Traffic Might Be Handled Under Difficult Conditions

By Charles W. Neill

WITHOUT taking time to outline the development, or to review the history, of the various street-traffic-control systems, it can definitely be said that the trend at the present time is toward "non-stop" traffic. The synchronized system, where all the signal lights on the street changed from "Stop" to "Go" at one time, was a big step forward in street-traffic control.

The so-called "progressive" or "platoon" systems are another and bigger step, which, as signal apparatus and methods of wiring are further improved, will bring closer approximation to non-stop traffic in city streets.

In the theoretical system here described, which will be referred to as the "Unit Progressive System," the result desired was first studied and the varied conditions under which a street-traffic system must work were considered. The system was worked out for result and no mechanical limitations of present signal apparatus considered, though the practicability of designing the necessary mechanism was taken into consideration. The Unit Progressive System is therefore one of great flexibility, adaptable to the varying and irregular conditions which exist in the actual city.

Any system of street-traffic control is primarily for the benefit of the automobile drivers. The object is to let each car reach its destination as quickly as possible, in keeping with safety. Increase in speed not only saves time, but it actually reduces the number of cars in the congested area, because they can get out or through the area sooner. More cars can use the street.

Safety demands that the maximum speed be limited and police regulations often define this limit. The elimination of stops at street intersections, however, increases the average speed without increasing the maximum. The way in which the Unit Progressive System permits non-stop traffic will doubtless be of interest to those concerned with the traffic problem.

The Charts Explained

Suppose a city avenue having intersecting streets at irregular distances as shown in Fig. 1. The width of the avenue is greatly exaggerated so that the distances along the length of it may be referred to a time base. A car M might start up the avenue from B Street and travel at a uniform rate of speed so that two minutes after leaving B Street it would reach the intersection of F Street and the avenue. The graph of the motion of this car M would be the line MM^1.

Suppose that another car, N, should start up the avenue from B Street 45 seconds later than car M, and travel at the same uniform rate of speed. The graph of the motion of this car N is the line NN^1. If the speed at which these cars travel is the speed limit, then both cars are making the best average speed possible without increasing the maximum.

If the avenue in Fig. 1 were a city street, it is almost certain that traffic on some of the intersecting streets would force M to slow down or even stop. If M were delayed at C street and D street, its travel up the avenue might be as shown by the dotted line to the right of the uniform speed line MM^1. These two delays cause a loss of time to M and increase the congestion by causing M to be longer in the crowded section.

From Fig. 1 the exact time at which M will

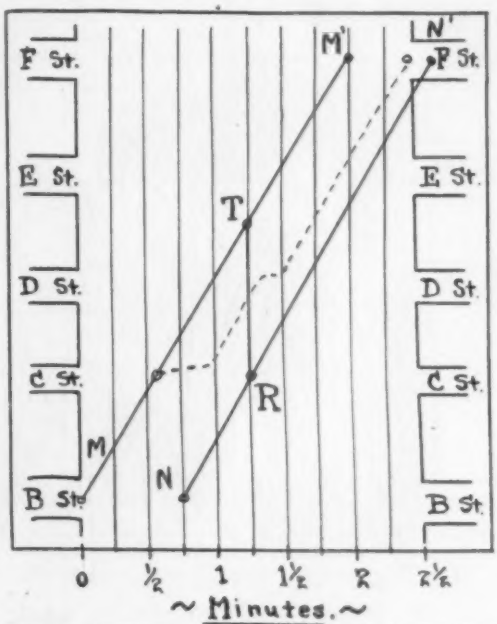


FIG. 1.—SHOWING THE PROGRESS OF TWO CARS (M AND N) AT UNIFORM SPEED ALONG A CITY AVENUE WITH INTERSECTING STREETS AT IRREGULAR DISTANCES

reach each intersection can be determined, if M maintains a known uniform speed. If each intersection along the avenue were equipped with a traffic signal light, these lights might be timed so as to give a "Go" signal to traffic coming up the avenue, just before M arrived at that intersection. The "Go" signal would, in effect, progress up the avenue at a uniform rate of speed. The length of time for M to go from any intersection to the next would determine the length of time between the appearance of the "Go" signal at any intersection and the succeeding one. This time would obviously be greater with long blocks than with short ones.

If the signals which changed to "Go" ahead of car M remained on "Go" for a little more than 45 seconds, then car N could travel the entire length of the avenue without a stop, and so could all cars between M and N.

The length of the wave or train of traffic which could pass up the avenue before the signal lights gave the cross traffic the right of way would be the distance between M and N, represented by the line TR. The length of this train is about two blocks, but it could be made longer or shorter by changing the length of time that the signal remained on "Go" for up-avenue traffic.

The signal at each intersection could give the cross traffic the right of way after car N had passed. After 45 seconds the cross traffic might again be stopped and another train of up-avenue traffic allowed to pass the intersection in exactly the same way as did the first one.

Fig. 2 shows, in more mathematical form, the same avenue as Fig. 1 with the successive trains of traffic moving up it. A driver at the head of any train might run at less than the speed limit, and let other cars pass him, until at the end of the avenue he was at the tail of the train. If this slow driver were near the tail of the train when he started up the avenue, the up-avenue "Stop" signal which progresses after the train would overtake and stop the slow driver and he would wait and become the first car in the next train. But even for this slow driver the Unit Progressive System permits better progress than would a synchronized system where all the lights flashed "Go" or "Stop" at the same time.

The "Empty Spaces" on the Avenue

Before going on to the question of two-way progressive traffic, something should be said in regard to the "empty spaces" on the avenue. Referring to Fig. 2, it will be noted that between the trains there is an empty space which is the same length as a train. It might be said, therefore, that the avenue is only half-full of cars; that only one-half of the available street space is being used, and that the system shown

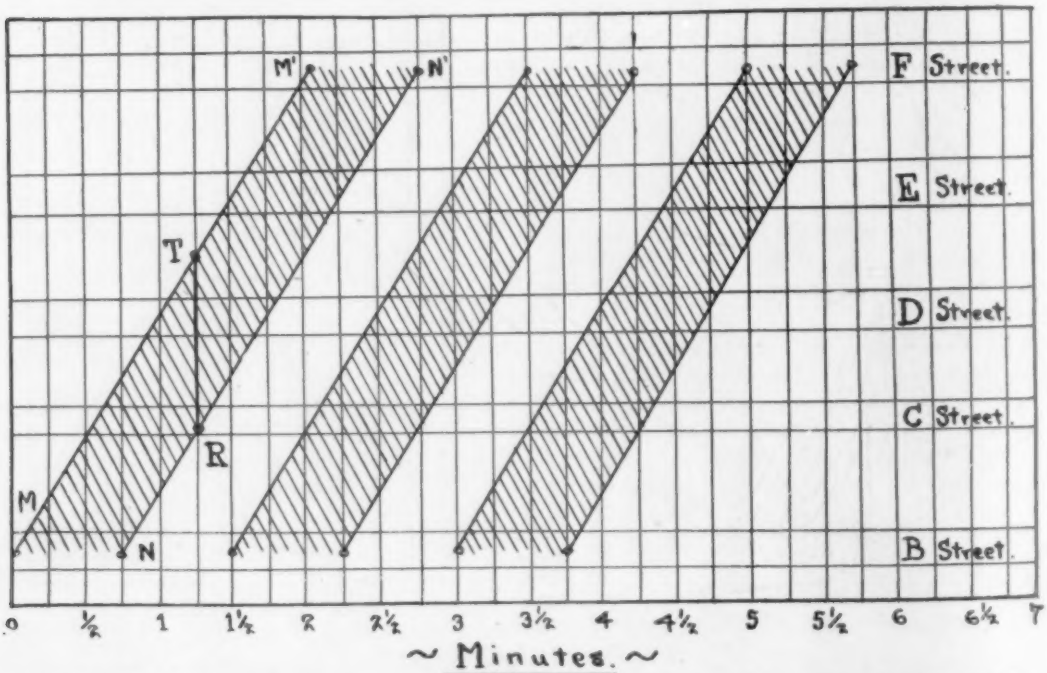


FIG. 2.—SHOWING SUCCESSIVE TRAINS OF TRAFFIC MOVING UP THE AVENUE ACCORDING TO THE PROGRESSIVE SYSTEM, WITH EMPTY SPACES BETWEEN, BUT WITH AS MANY CARS AS THE AVENUE CAN CARRY

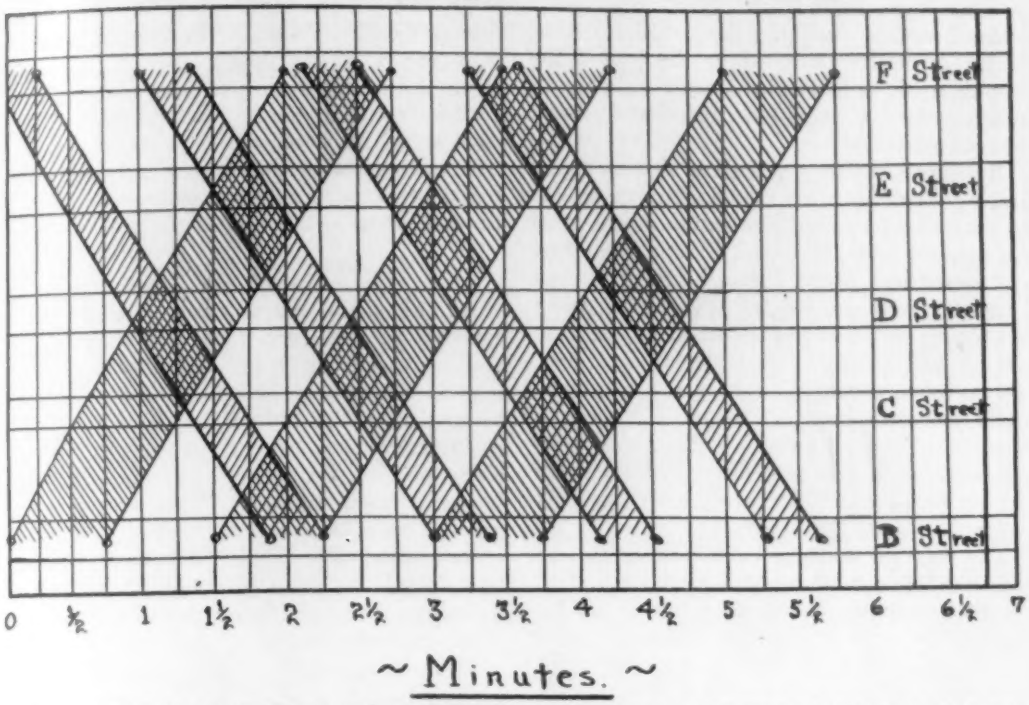


FIG. 3.—TWO-WAY TRAFFIC ON THE SAME AVENUE AS IN FIG. 2, WITH UNEQUAL PERIODS FOR AVENUE TRAFFIC AND CROSS TRAFFIC

in Fig. 2 is only 50 per cent efficient. This accusation is not true. In spite of the "empty spaces" the avenue is carrying all the cars possible without increasing the speed limit.

Fig. 2 assumes that the cross traffic is equal to the avenue traffic and any intersection, D Street, for example, must be open to cross traffic for the same length period as it is open to avenue traffic. Suppose that the avenue does not use the Unit Progressive System as in Fig 2, but uses some "100 per cent" system, where every square foot of street surface has a car over it. Traffic is equally heavy on D Street.

No matter what means are used to direct the traffic at D Street, the cross traffic must have the use of the intersection one-half of the time. The solidly packed cars on the avenue below D Street must all be stopped one-half of the time. The avenue has all of its surface area in use, but the cars are moving only one-half of the time. Because of starting and stopping, their speed *when moving* is less than that with the system shown in Fig 2. Twice the number of cars moving at less than half the speed means that in any given period of time actually fewer cars pass along the avenue. In Fig. 2 the avenue with the "empty spaces" is being used by more cars, and to better advantage, than the "full" street above described.

Besides not being any loss, the "empty spaces" have distinct advantages. Because of cars starting up from the curb and turning into the avenue from intersecting streets, there would be some traffic even in the "empty spaces." This traffic would be light, however, and the time would be valuable for pedestrian traffic to cross; for street cars and busses to load and unload; and for parked cars to get out into the street, especially where they park at 45 or 90 degrees to the curb and cannot get out while traffic is moving along the street.

Handling Two-Way Traffic

If separate signals direct the down traffic on the avenue, the Unit Progressive System may be applied to two-way traffic. While the one-way avenue is a better example from which to explain the system, all of the work in developing the system was done for two-way streets, since such a street presents more problems.

Fig. 3 shows the same avenue as in Figs. 1 and 2, but with two-way traffic. The down traffic is not so heavy as the up traffic. During the morning rush hours the traffic on the avenue leading from the suburbs is heavy. The bulk of the traffic will be the other way in the afternoon. The Unit Progressive System is designed so that the long trains can be shifted

to down traffic and the short trains to up traffic when desirable. In Fig. 3 the period for cross traffic is no longer equal to the period for avenue traffic as in Fig. 2. Proper train length relations may be found from formulas in terms of traffic volumes.

Reference to Fig. 3 will show that an intersecting street is often closed to cross traffic to permit an up train to cross, but during such time no down train crosses. Except under special conditions, where there was a great deal of rotary traffic to the left, the signals when permitting traffic in one direction on the avenue, should permit traffic in both directions. An up-bound car on the avenue, not in a train, could therefore cross an intersection while a down train was crossing. These extra "non-progressive" "Go" signals have value for street cars, busses, and vehicles which are going only a few blocks on the avenue.

The ordinary warning or caution signal between changes, on all systems, is omitted from all the graphs for the sake of simplicity, but its addition involves no new problems.

Another point which should be mentioned in connection with Fig. 3 is that in some cases, after the passing of a train in one direction, there are but a few seconds before the approach of a train from the other direction. These short periods occur whenever a pointed end of an unshaded portion of the graph (Fig. 3) falls on, or very near to, an intersecting street. As shown by Fig 3, these "points" do not always fall on the same intersection. To signal the cross traffic to go and 3 seconds later to signal it to stop, would have obvious disadvantages. The operating mechanism is designed to leave the avenue open to traffic which is not in trains where the period during which a cross street would be open is less than 10 seconds. Other minimum periods could be used.

The mechanism which would be required to operate signals on the Unit Progressive System calls for a timing device at each intersection. All of the timing devices might be operated electrically from a central station and each signal set with respect to its own timer. The mechanism in each signal, it is believed, might be so simple as not to increase materially the cost of an installation of signal lights.

Flexibility of the System

All of these graphs show signals progressing at a uniform speed and show traffic trains of constant length. Neither is necessary to the system. If a higher speed is safe along part of the avenue, the signal may progress faster along that part. If traffic is heavier along part of the avenue, the trains may be longer when in that part. The speed of progression may be varied at any time from the central office. The highest safe speed may be less during the rush hours or during rainy weather. Snow should certainly reduce the speed of progression.

When two streets, each using a two-way progressive system, intersect, the flexibility of the system is taxed to the limit. Full progression is theoretically possible on both streets, but not desirable, as it does not permit both streets to be used to the best advantage. Space will not permit an explanation of the application where one or more streets running in one direction and using the Unit Progressive System cross one or more other streets using the system. However, results using the intersecting streets to capacity have been worked out with 88 per cent progression. That is, 88 per cent of the cars approaching the intersection in trains, can cross without slowing down or stopping. Better results may be possible under favorable conditions.

Comments by a Signal Engineer on the Foregoing Article

WE have read with considerable interest the advance proof of your article on "How Non-Stop Traffic Might Be Handled Under Difficult Conditions." Mr. Neill's paper is very good, indeed, and will be of considerable interest to your readers, since a large number of cities, both large and small, are adopting progressive systems of traffic control.

There is one point, however, that we want to impress upon you as somewhat dangerous. In referring to Figure 3 the writer deals with the idea of having two lengths of "trains" brought about by the signals showing one length of period in one direction and a different length of period in the opposite direction. In other words, the traffic-handling periods of traffic moving south would be of different length from the traffic-handling periods for the traffic moving north.

When he begins to talk about this, he is getting into special signals, into special controls, and into systems which would require a considerable number of conductors from the control apparatus to the signals. This would require a very expensive installation and all he gains is the handling of additional traffic. He could obtain the same results by adopting the scheme which larger cities are using, of allowing traffic in the heavier-congested directions to make use of two-thirds of the street and in the opposite direction to make use of one-third of the street.

Change to Progressive System Readily Made

The most interesting, as well as practical, phase of the (alternate) progressive or platoon system,

as already installed in a number of cities, is the fact that cities having the ordinary synchronous system can easily change over their signals to the progressive system with but very little expense indeed. If they have a flexible control—that is, the type which has been on the market for the last year—the control which they have is satisfactory without any change. The only thing that is necessary is the disconnecting of two wires on each signal and the reversal of these two wires. This means that when the green on one signal shows in a given direction, the signal a block away shows red in that direction, which, of course, is the condition for the progressive system. Where there is a long block that is equivalent to two short blocks, the signals at either end of the long block are not changed. In case the city has a non-selective type of automatic control, it is only necessary to obtain a control in which the periods in the two directions can be either shortened or lengthened and yet one period be kept equal to the other period. This means, then, that the city can bring its traffic signal installation up to date at practically no expense, and it is surprising in what a large number of cities this has already been done.

It is a big step forward from the old synchronous system, and we do not know a single case in which, after it has been tried out, it has not been retained.

There are only two conditions that must be watched. One is that the block, or, in other words, the distance between signals, must be approximately the same length, and the other is that the periods must be of the right length so that traffic is moving at the proper speed.

Peoria, Ill. L. W. McOMBER.

Progressive Traffic System Originally Suggested Eleven Years Ago

THE earliest printed suggestion of the "progressive" or "platoon" method of traffic control which has come to the attention of THE AMERICAN CITY is the following statement by John P. Fox in the Proceedings of the National Conference on City Planning of 1916, pages 88-89:

"It seems to me that the hope of traffic improvement lies not in wider streets or elevated or underground through traffic streets, but in providing better traffic regulation. . . . The chief trouble with traffic regulation today lies in the long interval between traffic changes. The delay to vehicles varies directly as the frequency of traffic changes at cross streets. . . . The remedy is to eliminate the human element by relieving the policeman of the necessity of counting the number of seconds between traffic changes, and Mr. E. P. Goodrich has worked out the most ingenious arrangement for doing this, which is an automatic traffic signal. . . . Mr. Goodrich suggests having a system of signals which will change successively from safety to danger along the avenues, so that vehicles will run along the avenues at a uniform speed in groups, with twenty-second intervals between. In those intervals the cross traffic can pass or make turns, without delaying the main line of traffic."

In reply to a recent inquiry from the editor of THE AMERICAN CITY, Mr. Fox explains that the idea of the progressive or platoon system of traffic regulation originated with Mr. Goodrich and himself wholly independently at about the same time, eleven years ago, and that what suggested the idea to him was the signal system adopted for elevated trains on the Brooklyn Bridge. Here signal lights, showing alternately red and green, were spaced about 200 feet apart across the bridge, and trains could follow each other without stopping at a regular rate of speed much more closely than is possible with the ordinary spacing of train signals. A wave of red lights, following immediately behind a train, succeeded by a wave of green lights, suggested the idea, as applied to street traffic, of having alternate street blocks filled with steadily moving groups of vehicles, with opportunity for cross traffic to move in the intervals between the groups.

After lying more or less dormant for several years, the idea of progressive traffic control has recently been studied with great care by many traffic engineers and has been applied, with various modifications, in a growing number of cities. Articles descriptive of some of these studies and installations will be found in the following issues of THE AMERICAN CITY for 1926: April (page 397); May (page 553); June (page 654); July (page 78); October (pages 547, 549); and November (page 705); and this issue, page 599.

Civic Education in New York City Schools

IN a letter to district superintendents and principals, quoted in *Municipal Reference Library Notes*, Superintendent of Schools William J. O'Shea calls attention to the excellent work that is being done in many of the New York City schools in the matter of the civic education of the children. "It is very desirable that the work done in these schools be duplicated in every other school," he states, giving the following advice:

"In order to be effective, civic education should be begun as early as possible. Effective civic education in a democratic community entails at least three essentials:

"1. The giving to pupils the minimum civic information which is necessary for the ordinary citizen in a democratic community.

"2. The inculcation of certain attitudes and ideals so that the pupils may have the proper outlook upon community activities.

"3. The early development of the habit of active participation in such fundamental civic activities as tend to develop good and useful citizenship.

"Specifically, it is the duty of the school to make civic education more and more a practical matter which will actively influence the every-day conduct of the child. Such information as is conveyed to the child should be translated, wherever possible, into fruitful activity. The child should be so taught as to be interested in the welfare of his school, of his associates, and of the community in general. He should be trained to cooperate actively with the various agencies of the city and the state that minister to the welfare of the community."

Special Control Fits Low-Pressure Pumps for High-Pressure Service

Interesting Use of Remote Control of Pumping-Station in Jefferson, Texas

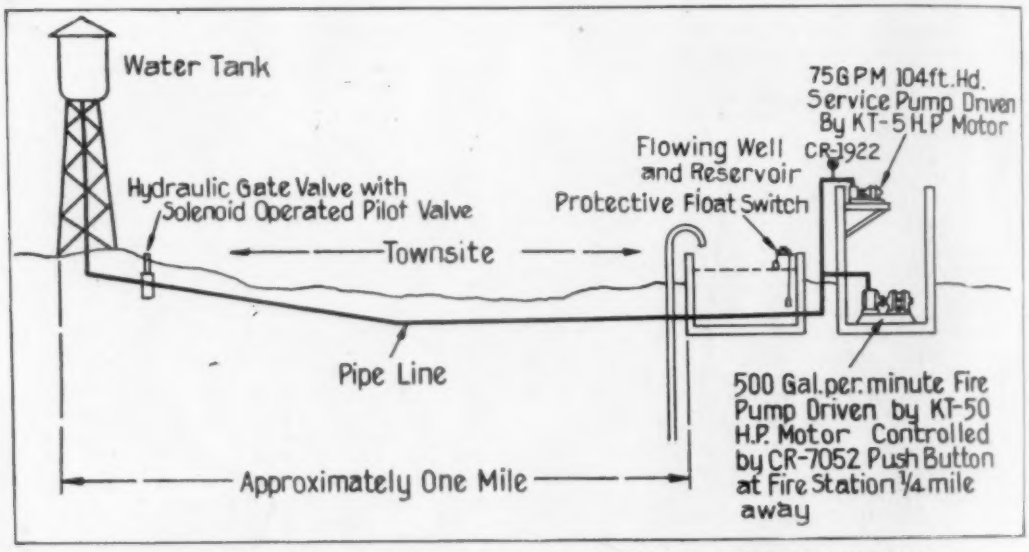
TWO motor-operated pumps with a special arrangement of control provide water at low pressure for ordinary consumption and at high pressure for fire fighting in Jefferson, Texas.

Jefferson is located between a flowing well and a pumping-station on the one side and on the other side a water-tank from which the town receives its normal water-supply by gravity. Under normal conditions a comparatively small pump fills the water-tank from the reservoir at the flowing well. Under fire conditions a high-pressure pump supplies water directly to the town mains.

The pumps are electrically operated and controlled by General Electric equipment. The service pump is of 75 gallons per minute capacity working against a 104-foot head, and is driven by a 5-horsepower squirrel-cage motor. This motor is controlled by an enclosed magnetic switch, which in turn is operated by a pressure governor. A protective float switch automatically shuts down the motor under low-water conditions at the reservoir.

The fire-pump is driven by a 50-horsepower motor and has an output of 500 gallons per minute against a head of approximately 200 feet. This is controlled by a push-button at the fire-station. The push-button operates two relays. One relay operates a remote-control automatic starting compensator at the pumping-station, and the other a contactor which energizes the solenoid of a hydraulic gate-valve equipped with a solenoid-operated pilot-valve. When a fire-alarm is given, an operator at the fire-station depresses the push-button, which starts the fire-pump and closes the gate-valve at the foot of the water-tank. Thus, the fire-pump delivers water directly into the mains at high pressure. When the fire is over, a "stop" button is depressed and the fire-pump stops, the valve opens and the service pump again picks up the load.

The installation was made by the Smith & Whitney Company, of Dallas, Texas.


Water Tank
75 GPM 104 ft. Hd. Service Pump Driven By KT-5 H.P. Motor
Flowing Well and Reservoir
CR-1922
Protective Float Switch
Hydraulic Gate Valve with Solenoid Operated Pilot Valve
Townsite
Pipe Line
500 Gal. per. minute Fire Pump Driven by KT-50 H.P. Motor Controlled by CR-7052 Push Button at Fire Station ¼ mile away
Approximately One Mile

DIAGRAMMATIC SKETCH OF WATER-WORKS AT JEFFERSON, TEXAS

Franchise Contract versus the Police Power as a Mode of Public Utility Regulation

is the title of an article of more than 4,000 words, written especially for the 1927 MUNICIPAL INDEX by Delos F. Wilcox, Ph. D.—See pages 108-111 of that volume.

Surface Treatment by the Hot Application Method

By N. S. Anderson

Maintenance Engineer, South Carolina State Highway Department

EXPERIMENTAL work in connection with the development of a type of surface treatment for earth roads in South Carolina was initiated by Charles H. Moorefield, State Highway Engineer, in September, 1923, by the construction of six short sections varying in length from 100 to 235 feet on State Highway 2 between New Brookland and Cayce. The work was done under the immediate supervision of Ambrose Harwell, then Maintenance Engineer. Crushed granite was used on all sections, and five of them were of a penetration or semi-penetration type varying in thickness from 4½ inches down to 2½ inches. Four of the five sections received two applications of tar, the first application being a light tar applied cold, and the second a heavy tar applied hot. The fifth section was treated only with heavy tar applied hot.

The sixth section was of the true surface treatment type, being only approximately ¾-inch in thickness. The treatment included the sweeping of the original road surface, then the cold application of ¼-gallon per square yard of light tar, which was allowed to stand 24 hours with no traffic. This was followed with ⅓-gallon per square yard of heavy tar, which was applied hot and immediately covered with about 45 pounds per square yard of crushed granite, graded from 1¼- to ¼-inch, and the road rolled with a three-wheeled 10-ton power roller before it was thrown open to traffic.

All six sections were closely observed under traffic, which averaged about 1,500 vehicles per 24 hours for two months, and by that time there were some signs of "pushing" in the thicker sections, which were not evident in section 6. For that reason and because the thicker treatment would under ordinary conditions cost from three to five times as much, it was decided to extend the thin treatment used on section 6. During November, 1923, an additional two-mile stretch was constructed.

Surface Treatment of Earth Roads

During the summer of 1923 the South Carolina State Highway Department undertook to develop a bituminous penetration or surface treatment for use on the better class of earth roads of the state highway system that would promote the comfort of highway traffic during adverse weather conditions and do away with the dust nuisance, as well as making it possible for these roads to withstand a comparatively dense motor vehicle traffic without excessive maintenance cost until such time as funds might become available to pave them.

Longer Section Treated

The original earth surfacing material on this road which was treated in 1923, was decidedly variable. Some stretches of it were a sand-clay mixture of rather good quality, and others a mixture of sand, clay, gravel, and waste from fertilizer factories in varying proportions. The sections containing a large proportion of waste were of a reddish tinge due to the high content of iron compounds. By the spring of 1924, enough failures had developed in the thin surface treatment over weak spots in the original surfacing to make it evident that the success or failure of this type of treatment was largely dependent on the quality and supporting strength of the earth road surface so treated, and this was kept in mind when two additional roads were chosen for treatment in 1924.

Seven-Mile Road Treated

The first one of these to be treated was a 7-mile section of route 19 between Spartanburg and Inman which bears a traffic of about 1,100 vehicles in 24 hours. The subgrade was mostly clay or a sand-clay mixture rich in clay, and the surfacing a top soil of unusually good quality. This work was done in May, 1924, and was of two different types, one being practically the same as the thin treatment given section 6 mentioned above, namely, ¼-gallon per square yard of light tar and ⅓- to ½-gallon per square yard of heavy tar, this being covered with about 50 pounds per square yard of crushed granite graded from 1¼- to ¼-inch and rolled. Both tars were applied hot.

The second type was the same, except that "liquid asphalt," a heavy asphaltic oil, was

used in place of the heavy tar and was applied hot. In order to make both of these types more nearly impervious to water before winter began, they were given a seal coat during November, 1924. In connection with the first type, this consisted of about 1/5-gallon per square yard of light tar, applied warm and covered with coarse local sand. The seal coat given the second type consisted of about 1/5-gallon per square yard of a lighter grade liquid asphalt or asphaltic oil than the previous coat, applied warm and covered with coarse local sand. Both of these types have stood up well so far. No further applications of bituminous materials were made up to November, 1926, other than some small patches.

The second road to be surface-treated during 1924 was a 7⅓-mile stretch of Route 8 between Gaffney and Blacksburg, which bears a traffic of about 1,000 vehicles per 24 hours. Here the subgrade was also mostly clay or a sand-clay mixture rich in clay, but the surface was largely clay-bound macadam, consisting of crushed stone bound with clay or a sand-clay mixture rich in clay. Six different treatments were given the various sections, beginning at Gaffney. All of the bituminous material was heated, although this was not absolutely necessary, for the prime coats and all single treatments and second coats of double treatments were covered with crushed stone and rolled. The treatments were:

No. 1. ¼-gallon per square yard of light tar, and approximately 0.45-gallon per square yard of heavy tar

No. 2. ¼-gallon per square yard of light tar, and approximately 0.45-gallon per square yard of liquid asphalt or heavy asphaltic oil.

No. 3. ½-gallon per square yard of liquid asphalt or heavy asphaltic oil of the same grade as used in No. 2.

No. 4. Approximately 0.45-gallon per square yard of heavy tar of the same grade as used in No. 1.

No. 5. ¼-gallon per square yard of light asphaltic oil, and approximately 0.45-gallon of liquid asphalt or a slightly lighter grade of heavy asphaltic oil than used in No. 2 or No. 3.

No. 6. ½-gallon per square yard of liquid asphalt or the same grade of heavy asphaltic oil as used in No. 5.

During October, 1925, it became necessary to scarify and re-treat about 18 per cent of No. 1, the double tar section adjacent to the city limits, which was probably due to adverse conditions connected with the old surfacing and traffic rather than to the surface treatment itself. About 3 per cent of No. 2, the tar asphalt section, was re-treated, as well as about 52 per cent of the combined length of Nos. 3 and 6, a single asphalt section. Also about 60 per cent of No. 4, a single tar section, and about 33 per cent of No. 5, the double asphalt section, were re-treated. All of this re-treatment was done with tar prime asphalt second coat covered with crushed stone. During January, 1926, all six sections were given a seal coat of 1/5-gallon per square yard of a fairly light liquid asphalt or asphaltic oil applied warm and covered with coarse local sand. No further applications of bituminous material were made, except that used in small patches, up to November, 1926.

During the summer of 1925 it was decided to surface-treat a 6¾-mile stretch of Route 19, a top-soil road between Inman and the North Carolina line, and also 7 miles of Route 2, another top-soil road between Greenville and Fountain Inn. By this time it seemed evident that the two types of surface treatment given Route 19 during May, 1924, were holding up well, and that the second type in which asphalt was used in place of heavy tar for the second coat was retaining its "life" somewhat better than the double tar treatment. Also sections 3, 4 and 6 on Route 8, the single treatments of asphalt, tar, and asphalt respectively, given October, 1924, had not only developed a larger proportion of failures than the adjacent double treatment, but also showed in a few places a slight tendency to "push."

Bearing in mind these results and the comparative prices of bituminous materials in this particular part of the country, it was decided to treat this additional 1925 mileage with tar prime coat, asphaltic second coat, and asphaltic seal coat. With a few experimental exceptions, this same type has been used on approximately 70 miles of surface treatment placed during 1926.

1926 Construction Methods

A few months before work is to be started on the surface treatment proper, the old top-soil surfacing on the road is scarified. The necessary additional top soil is added and the road then shaped to the proper crown with road machines and opened to traffic so as to compact the loosened top soil. It seems always to be a moot point as to just when this scarifying should be done. If it is done too long before the surface treatment, the road, although receiving the ordinary maintenance attention, is likely to get somewhat rough in the meantime. On the other hand, if traffic is not given time enough to thoroughly compact the scarified top soil, failures in the surface treatment over the soft spots will result. It is believed to be decidedly preferable to scarify and add top soil several months before the surface treatment so that the top soil will have a chance to compact during a number of wet spells, and then to scarify very lightly or machine very heavily a comparatively short time before the surface treatment so as to avoid perpetuating corrugations or other rough spots. It is understood, of

course, that during all this time the usual continuous maintenance work is carried on.

The top-soil surfacing is then swept with a revolving broom pulled behind a truck, and any loose material that still remains in place is removed with hand brooms. The tar prime coat is then applied, usually at a temperature of around 125 degrees Fahrenheit and at a rate of from ¼- to ⅓-gallon per square yard. This is as much as the top soil will readily absorb in one application. The road is ordinarily closed to traffic and the prime coat allowed to dry out for about 24 hours in warm, dry weather and a correspondingly longer time in cold or damp weather. If it is impossible to keep traffic off the prime coat, enough sand is spread over it to keep it from picking up and any loose sand remaining is swept off just before the second coat is applied. It is of course impracticable to avoid having occasional potholes or ruts in the top-soil surfacing, and, after the prime coat has been applied, these are filled with crushed stone, which seems to take care of them in a fairly satisfactory manner.

The second coat, a heavy asphaltic oil, is then applied at a temperature of around 300 degrees Fahrenheit at a rate of approximately ⅓-gallon per square yard. This is immediately covered with about 50 pounds per square yard of crushed granite, graded from 1¼- down to ¼-inch, which has been previously deposited in piles along the shoulders of the road and is spread by hand with scoops. In order to obtain a more even distribution, two men usually follow the shovelers and level off the high spots with rattan or wire push brooms, and they are followed immediately by a three-wheeled power roller. A 10-ton roller was used originally and, although it would probably be satisfactory for use with a less friable stone, it was found to crush the larger pieces of our granite somewhat more than we desired, so that the weights of the rollers now being used are from 5 to 6 tons.

After rolling, the treatment has the appearance of a crushed granite surfacing with but a few signs of the bituminous material showing on the surface. It is open to traffic at once, and as time goes on a small part of the crushed granite is "whipped" to the side. The asphalt works up through the remainder, and the treatment consequently becomes darker in color. After the lapse of several months, and nearly always before the next winter, a seal coat is applied to make it more nearly impervious to water. This consists of a fairly light asphaltic oil, applied at a temperature of around 175 degrees Fahrenheit or higher if the flash point permits. This is applied at a rate of approximately 1/5-gallon per square yard and immediately covered with about 15 pounds per square yard of coarse sand.

We have also used a small amount of a cut-back product similar to the old OC-2 described in the Department of Agriculture Bulletin No. 691. This did not bleed over as long a period as the other nor get as slippery in wet weather. On the other hand, it cost more in our locality and we have not been able to work in nearly so high a proportion of sand, which results in a much thinner seal coat. Under our present practice, nearly all of the wear on the surface treatment is taken care of by the seal coat, making any decided reduction in thickness seem uneconomical, and consequently our use of a cut-back material has been rather restricted.

Data on Costs and Materials

The amounts of materials used on the three typical jobs, as well as their cost of construction, are given in the following brief paragraphs:

Route 2, Greenville-Fountain Inn, 10.83 miles treated for a width of 18 feet in 1925. Tar prime, 0.292 gallons, asphaltic second coat, 0.358 gallons, and crushed stone, 50.4 pounds per square yard, at a cost of $1,185 per mile. Seal coat at a cost of $202 per mile.

Route 8, Cowpens-Gaffney, 6.93 miles treated for a width of 20 feet in 1926. Tar prime, 0.300 gallons, asphaltic second coat 0.352 gallons, and crushed stone 54.1 pounds per square yard, at a cost of $1,846 per mile. No seal coat placed up to October 10, 1926.

Route 8, Anderson-Greenville, 28.2 miles treated for a width of 20 feet in 1926. Tar prime, 0.263 gallons, asphaltic second coat, 0.376 gallons, and crushed stone 54.2 pounds per square yard, at a cost of $2,060 per mile. No seal coat placed up to October 10, 1926.

It is to be noted that these costs do not include interest charges or depreciation of heavy equipment such as trucks, rollers, and distributors, nor the cost of the engineering supervision given the work by the division and headquarters offices. Also, the cost of the preliminary work of putting the top-soil surfacing in first-class condition is not included. Nearly all the sand used in the seal coat on the first of these three jobs was taken from the side ditches, which accounts for its low cost. Ordinarily, the sand is hauled from nearby creek beds and dumped in piles along the shoulders of the roads, and in some cases the same type of seal coat costs very close to $300 per mile.

Maintenance

For a week or so after the completion of the surface treatment, exclusive of the seal coat, a power roller is of considerable value in the

maintenance work, particularly during hot weather. In cases of partial failures, due to poorly compacted top soil, if sufficient moisture is present in the soil, it can sometimes be compacted and the broken surface treatment rebonded by rolling without the use of additional materials. After the surface treatment has set up, however, we make no further use of the rollers. The maintenance equipment consists of trucks, trailer type portable heating kettles, equipped with hand pump, hose and spray nozzles and the necessary small tools, including tamps. Potholes, caused usually by sand pockets or an excessive amount of clay and mica in the top soil, as well as narrow strip failures due to a blocked nozzle in the distributor during the application of the second coat, are patched promptly as they occur. Both cold patch and a heavy asphaltic oil of the same specifications as that used in the second coat, and cold patch are used. Enough crushed stone for use with the former for a considerable length of time is available from the excess granite whipped to the side of the surface treatment. Crushed stone of a somewhat smaller maximum size than that in the original treatment is shipped to convenient points, where it is mixed with the cold patch and the mixture stored until it is taken out to the road on trucks. The patching done in place with the heavy asphaltic oil is somewhat the cheaper, but it has the disadvantage that the tendency of the average workman, particularly of a green one, is to use altogether too much bituminous material, which results in patches that are thicker than the adjacent surface treatment, producing irregularities in the road surface.

Under traffic, the surface treatment, particularly if the original treatment was narrow, constantly tends to lose width by failure of the outer edges. We have tried to obviate this by thickening the edges during construction, and to control it during maintenance not only by thickening edges, but also by the use of both cold patch mixture and crushed stone bound with asphalt of 85 to 100 penetration. The results obtained so far seem somewhat promising, but not very decisive.

Maintenance Costs

The maintenance costs of our first surface treatment of a top-soil road, the 7-mile stretch on Route 19 between Spartanburg and Inman, have not been kept separately for the two types of treatment, but are rather interesting nevertheless. The seal coat cost $304 per mile, and the first year's maintenance cost, exclusive of the seal, amounted to $385 per mile. The second-year maintenance cost was $258 per mile, and its present condition indicates that the cost during the third year will probably not exceed $300 per mile. These costs include work on the shoulders, bridges, and culverts, but do not include depreciation of equipment or cost of supervision by the division or headquarters offices and for a route that would cost at least $600 per year to maintain properly as an untreated top-soil road.

The first year's maintenance cost of the 10.83-mile stretch between Greenville and Fountain Inn, completed in 1925, amounted to $451 per mile, exclusive of the $202 per mile seal coat. This is about in line with the costs above, considering the fact that the treatment was some 2 feet wider than on the older road and the quality of top soil inferior.

Value and Adaptability of Surface Treatment

Although our experience with this type of surface treatment has been comparatively short, we have reached some interesting conclusions, chief among which are:

First, that this particular treatment is absolutely unsuited for use on such of our roads as have a poor quality of sand-clay or other earth surfacing that has not sufficient inherent supporting strength to prevent deformation under the usual wheel loads of highway traffic.

Second, that the treatment is suitable and economical on those of our roads having a good quality of top-soil surfacing and carrying a fairly dense traffic, largely of motor vehicles, of which only a small proportion are heavily loaded trucks. Under these particular conditions, this treatment is a valuable stop-gap until funds become available for paving.

For instance, take the 7-mile stretch on Route 19 between Spartanburg and Inman that was completed early in the summer of 1924. The preparation of the top-soil surfacing cost less than $200 per mile, the original surface treatment not over $2,000, and the seal coat $304 per mile. The first year's maintenance was $385, and the second-year maintenance $258 per mile. The construction plus the maintenance cost divided over the two-year period amounts to $1,573.33 per mile per year. The present condition of the road indicates that the third-year maintenance cost should not run over $300 per mile, which would give a construction plus maintenance cost over a three-year period of $1,149 per mile per year, and even if it should become necessary to place a second seal coat before the expiration of the third year, this cost would be increased to only about $1,249.

The construction cost of the work done the latter part of 1926 did not run any higher than those given above. The Anderson-Greenville Road, a long-haul job, cost about $209 per

mile more for the preliminary work and $60 per mile more for the original surface treatment, a total increase of $269. The Cowpen-Gaffney Road, on which an unusually large number of curves were banked, cost $729 more per mile for preliminary work and $153 less per mile for original surface treatment, a net total increase of $575. The cost of the seal coat on these two roads should not be more than the $304 mentioned. We have no reason to anticipate that the maintenance cost will be very much higher. In the case of the Spartanburg-Inman job, we have given the traveling public a road with excessive crown and unbanked curves, which is considerably rougher riding than pavement, but altogether, smoother than the average condition in which top-soil surfacing can be maintained within a reasonable cost, and which is dustless and not affected by adverse weather conditions. In the other two cases, the crown has been suitably reduced and the curves banked, and the roads are not only dustless and unaffected by adverse weather conditions, but also nearly as comfortable to ride over as the average pavement.

These construction plus maintenance costs do not include cost, interest charges, or depreciation of heavy equipment, nor cost of engineering supervision given by the division and headquarters offices. If it is desired to add any amount in reason to cover this omission and then compare the figures with the interest charges on the construction cost plus the cost of maintenance of the usual types of high-class pavements, the comparison will favor our methods. It is believed that the surface treatment of the existing top-soil roads has enabled the South Carolina State Highway Department to give its traveling public a much larger mileage of comfortable-riding roads than would otherwise have been possible with the funds available.

ACKNOWLEDGMENT.—From a paper read before the Fifth Annual Asphalt Paving Congress, Washington, D. C.

A Pressure Filter Plant for a City of Three Thousand

Superior, Nebr., Materially Improves Water-Supply for Domestic Consumption

SUPERIOR, with a population of approximately 3,000, ranks third in railroad facilities and twenty-third in population in the state. For a great number of years trouble had been encountered with the water-supply at Superior on account of contamination, insufficient quantity, and poor quality. The present daily consumption averages approximately 300,000 gallons. The supply is obtained from three 24-inch Kelly wells and fourteen 6-inch wells equipped with brass strainers. These wells range from 30 to 35 feet in depth, at which depth they reach the water stratum, a formation which formerly was the river-bed.

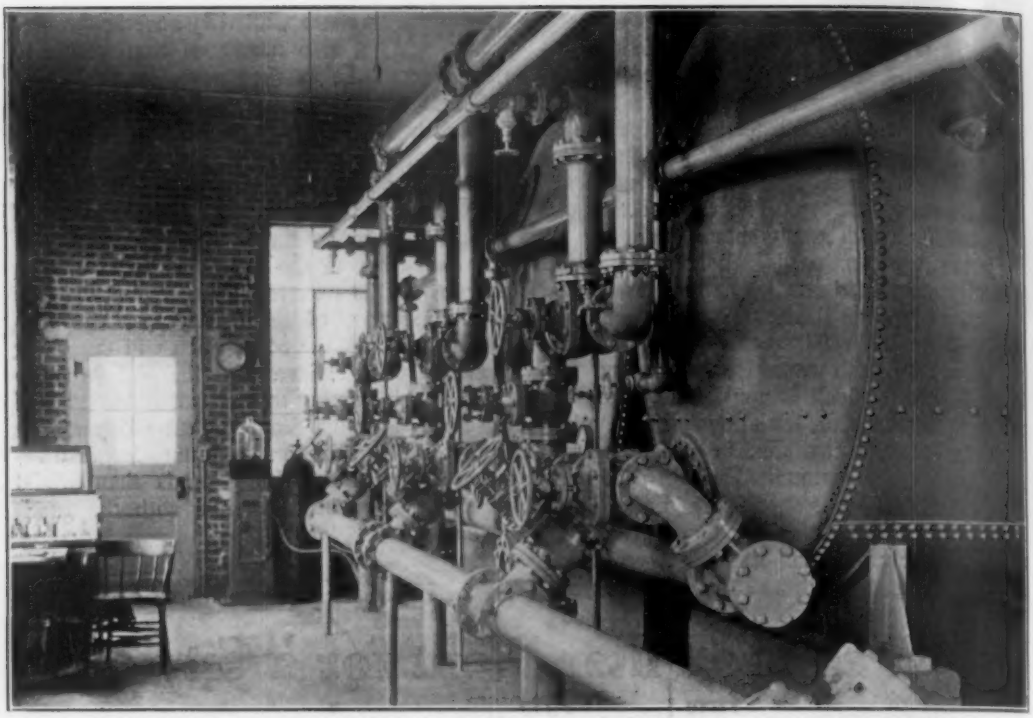
The presence of free carbon dioxide gas is the cause of a large amount of soluble iron which precipitates in the mains, causing rapid growth of crenothrix. This organism causes considerable trouble in the service pipes and water-mains as well as a great deal of dissatisfaction due to the discoloration of bathroom and other plumbing fixtures.

The water was formerly pumped from the wells to the clear well at the pumping plant, which served as a storage to supply the two direct-pressure steam pumps at the plant. There was no available reserve supply under pressure, and the pumps were required to operate twenty-four hours a day. At times part of the city was without water at a satisfactory pressure, or the water available was turbid. The improvements, now completed, are delivering to the city an abundance of soft, clear, sterilized water, which is very pleasing to the citizens. The improvements consist of a reinforced concrete enclosed fountain-type aerator, and a coagulating basin, remodeled from an old sedimentation basin which was thoroughly cleaned, algae-proofed and equipped with proper baffles. Three 18 x 14-foot Graver pressure filters having a capacity of one million gallons per day were installed, and two 500-gallon-per-minute, single-stage, electric-driven pumps are used for pumping water from the reservoir through the pressure filters to the clear well.

For washing the filters there are in use a 12,000-gallon-per-minute wash-water pump, one air-compressor, motor and air-tank. There is also included chemical equipment necessary for treating the supply with lime, alum, and soda ash and for sterilization with liquid chlorine.

Pressure in the mains and sufficient reserve supply are secured through the use of one 300,000-gallon steel tank on an 80-foot steel tower, furnished by the Graver Company, East Chicago, Ind.

The pumping equipment was installed by the Interstate Machinery & Supply Company,



PRESSURE FILTERS IN THE MUNICIPAL WATER-WORKS AT SUPERIOR, NEBR.

Omaha, Nebr., and consists of two 500-gallon-per-minute American centrifugal pumps, direct-connected to 10-horsepower, 220-volt, 60-cycle General Electric motors, a Gardner Class H duplex cylinder vertical water-cooled air-compressor, complete with a 10-horsepower, 220-volt, 60-cycle G. E. motor and a 6-inch American centrifugal wash-water pump, having a capacity of 1,200 gallons per minute. The pump is direct-connected to a 20-horsepower, 220-volt, 3-phase, 60-cycle G. E. motor. A Wallace & Tiernan dry feed chemical feeder and miscellaneous piping were furnished, and a vaccuum type W & T chlorinator. The Henningson Engineering Co., Omaha, were engineers for this project.

Resurfacing Old Macadam and Gravel Roads with Rock Asphalt

By Joseph P. Feeley
City Engineer, Rutland, Vt.

THE heaviest-traveled business thoroughfare in Rutland is Center Street, carrying a steady stream of motor and horse-drawn vehicles. Originally it was a tar concrete. In the summer of 1924, when this was practically worn out, it was resurfaced with Kyrock, which has stood the hard Vermont winters without the slightest unfavorable effect of frost or cold. Its appearance and riding qualities brought such favorable comment from taxpayers that several more streets were resurfaced the following year.

One of these streets, Woodstock Avenue, is the main artery for tourist travel to and from the river valley and the White Mountains. The old surface of this highway was in some places macadam and in others gravel on a telford base. It had been treated for several successive seasons with various oil preparations, but did not stand up under the heavy traffic conditions, developing potholes and ruts. When the rock asphalt was laid on this main highway, it was done without stopping tourist travel, by the simple expedient of laying one side of the road first, then permitting automobiles to use that side while the other was being

WEST STREET HILL, RUTLAND, VT., WHICH IS NOW THE CHOICE OF MOTORISTS IN WET WEATHER BECAUSE OF THE NON-SKID QUALITIES OF THE NEW SURFACING

completed. This did away entirely with detours, which would have been a very serious matter during the month of heavy traffic while this work was going on.

The cost of this method of resurfacing our pavements compared very favorably with earlier resurfacing jobs, and numerous petitions were received by the city to resurface other streets in the same manner.

West Street, with a traffic density of over 2,000 vehicles a day and a grade of 12 per cent, had an old macadam base which rutted and gullied badly during storms before resurfacing. This street was also resurfaced with

MERCHANTS ROW, RUTLAND, VT., SHOWING CENTER STRIP WHERE STREET-CAR TRACKS WERE COVERED WITH KYROCK

Kyrock. It has withstood a number of severe storms with their consequent heavy flow of surface water. The comparatively non-skid quality of the surface has recommended it very highly to motorists using this street during storm conditions.

Abandoned Street-Railway Tracks Covered

We have a number of abandoned street-railway tracks in the city with the rails imbedded in cement pavement. As an experiment, I covered these rails on one of our principal streets with a thin coat of Kyrock. The results obtained were so favorable that the work was extended to cover all the old rails which could not be torn up without considerable damage to the pavement and consequent heavy expense.

A Novel Welded Guard-Rail

AN oil company has a private road leading back to one of its leases. The country traversed is very steep and mountainous, making travel hazardous in places, especially in wet weather. The road is also heavily ditched along the inside to catch the surface water coming down the mountainside during storms.

To protect the traffic, which is principally heavy trucks, from this deep ditch, the company built an all-welded guard-rail out of used 2½-inch steel pipe. The pipe was set on posts about 2½ feet above the ground. The posts also were made of pipe, but of a larger diameter, and the upper end of each was slotted with a cutting blowpipe to provide a cradle for the string. These posts were imbedded in concrete and set about 5 feet apart.

The rail was set up as follows: A length of pipe was laid on two posts. The pipe was welded to the first post and then to the second, successive lengths of pipe were butt-welded end to end. To conform to the curve of the road, the pipe was bent while still hot from the weld to fit into the cradle of the next post. It was but the work of a moment to heat any section with the blowpipe sufficiently for a bend. Thus, heating and bending to fit the cradle was done as the line progressed. Finally, the entire rail was finished with a coat of weatherproofing paint.

In service this guard-rail has resisted the heaviest types of trucks. The only effect of a collision has been to bend the pipe slightly. A little heating with the blowpipe, a few taps with a sledge, a dab of paint, and the original appearance is restored.

The oil company finds this type of guard-rail to be the most economical and safe. It eliminates the fire hazard which exists when wood is used. Furthermore, there is no danger of splintering during collision. While this construction was used exclusively as a guard-rail on a private road, the utility of similar pipe lines along highways can perhaps be extended further during warm weather. By connecting a pipe leading from a spring to the upper end of such a guard-rail, the pipe line will deliver drinking water to fountains or troughs lower down and may even be used by nearby buildings.

WELDED PIPE USED AS ROAD-GUARD IN HILLY COUNTRY

ACKNOWLEDGMENT.—Illustration by courtesy of *Oxy-Acetylene Tips.*

"Where Traffic Goes—Value Grows"

A real estate advertiser's slogan which offers an unconscious argument for benefit assessments and land-value taxation.

The New Conception and Treatment of Crime

By Philip Archibald Parsons, Ph. D.

Director of the Portland School of Social Work, and Professor of Applied Sociology, University of Oregon

LET us candidly face the question of the criminal. It is obvious that he does not fit into the social scheme. Either he cannot do so or he will not. Much depends on the reasons in either case. If he cannot adapt himself to the requirements of society, it is very important that we should know why; if he is able and chooses not to do so, it is just as important that we should know the reasons for his perversity. It is now apparent that a large percentage of our criminals are unable to adapt themselves to modern society. It is equally true that a portion of them might adapt themselves if they would, but for some reason or other they refuse to do so.

Whether the criminal is perverse or pathological, the problem which confronts us now is what we are going to do about it. Traditional theory and practice have brought us nowhere. There is no hope of improvement as long as prevailing methods of dealing with criminals are perpetuated. The whole system is wrong from top to bottom. It is based upon erroneous theories as to the motives for behavior, and theological and metaphysical misconceptions regarding human nature and social relationships. It is time that we set to work upon some definite plan to substitute an intelligent program in its place. If there are technical difficulties in the way of its application, the plan should be comprehensive enough to provide for the removal of these. If this involves time, it is all the more important that we should go about it without further delay. There is absolutely nothing to be gained by waiting. The present system could not be more effectively discredited if we perpetuated it for another century or so.

"Crime and the Criminal"

is the title of an important recent book by Dr. Parsons, a portion of one of the chapters of which comprises the accompanying article. The book discusses, for the benefit of police officers, governmental officials, and students of criminal sociology, the development of theory and procedure in the handling of crime, and especially modern ways and means of the social treatment and prevention of crime.

Another installment, "Measures Looking to the Prevention of Crime," will be published in an early issue of this magazine.

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The Need for a Scientific System

We should make an honest effort to be scientific in all our dealings with the criminal. This, of course, would mean practically a complete revolution in our system of protection, with the possible exception of a part of our procedure in dealing with juveniles. To state the case briefly, we need to put the entire matter of criminals and their treatment in the hands of specialists. This is in line with the spirit of the time in which we live. Business and industry have committed themselves to specialists. They demand the most highly trained experts available and they pay them well for their services. Likewise in the professions we have come to set high standards. Lawyers, doctors and teachers must comply with rigid requirements before we permit them to practice. In two of the most important fields of human relationships, however—in politics and social protection—we still act upon the absurd assumption that any adult citizen is qualified to handle public affairs, including the protection of our lives, our persons, and our property against abnormal and anti-social beings. There is absolutely no valid reason why we should continue to act upon this assumption. The main reason why we do so, is because we have been doing it that way. Since that way has been such a disastrous failure, there is every reason why it should be abandoned.

Shift of Emphasis from Crime to Criminal

The first important step to be taken in planning an adequate system of repression is to shift the point of emphasis from the crime to the criminal. We have seen how a beginning was made in this direction by the modern school

of criminal scientists. Practically all of the progress which has been made in the direction of a more intelligent handling of the crime problem in the last forty years has been the result of this shift. With this change in emphasis we have come to see clearly how erroneous our theories about responsibility, motives for crime and results of punishment were and are. It is now time to abandon the efforts to make conditions fit a set of theories, and to devote ourselves with all the intelligence we possess to contrive a system to fit conditions as they exist. Several proposals for a scientific system of criminal procedure have been made in recent years. All of these are based more or less definitely upon the proposition which is now clearly demonstrated by criminal science, namely, that the majority of criminals are pathological to some extent; that this pathology is predominantly in the direction of mental deficiency and ill health; and that those criminals who are not pathological in mind or body are defective in their attitudes toward society for some reason or other. In any event, the scientific system of dealing with criminals will be adapted to the criminal, whatever his reason for committing crime may be.

The shift in emphasis from crime to the criminal involves sweeping changes in present methods of social defense, including the organization of the police, the collection of evidence, and in methods of going about securing the offender. It involves the entire process of identifying the offender with the offense. Finally, so far as procedure is concerned, it involves the entire process of treatment of the offender after his conviction.

In addition to these sweeping changes in social protection and in dealing with persons already delinquent, it involves shifting the point of emphasis from dealing with offenders to the much more important work of preventing delinquency by more scientific education and medical and mental diagnosis, as well as by more scientific law-making and a certain amount of reorganization of the social system.

In sketching the outlines of a scientific program for dealing with the problem of the criminal, let us begin with society's initial reaction to a given crime and follow the case through the customary procedure and treatment, concluding with a summary of the more obvious and practical suggestions for anticipating criminal behavior as far as possible.

Scientific Social Defense

Society's first line of defense is the police. Much of the success of a scientific program would depend upon their efficiency. Any program without a technically trained police or some efficient substitute for it would be inadequate.

Police schools similar to Vollmer's, with some amplification of training and a longer period of study, might in time be developed into definite departments of our state universities, with practical training in connection with police departments in the larger cities, similar to our present schools for social work training.

The present method of shifting men about on the force from one department to another should give way to the development of experts in the different lines of the service. The criminal department, of course, should be manned by policemen with special training for their work. It should include knowledge of criminals and their ways, methods of detecting criminals, the scientific collection and handling of evidence, and the making and handling of records of identification. Above all else, they should be trained to the point of self-confidence and have a professional pride and interest in their work. Compensation and security of tenure as well as the respect of the public should be such as to attract and hold capable men. It goes without saying that the service should be freed from political interference.

As Woods and Fosdick have insisted, the police force should ultimately participate in a general social program for crime prevention. A police force loyal to the public and incorruptible by the influences of vicious and criminal elements of the population would become a terror to evil-doers and be sure of the loyal support of the community. The removal of the suspicion of corruption and the manifestation of skill and efficiency in the doing of their work would make the police the pride of the community. The admiration of youth could easily be shifted from the criminal to the officer of the law, and the adventurous spirit of boys be turned from outlawry to law enforcement.

The Task of Identifying the Offender

Let us assume that we are confronted with an individual who appears to be the perpetrator of a crime which has occurred. All of the evidence available has been accumulated and studied by scientific methods. Aside from certain details, society knows that something has happened, such as a murder, a burglary, a hold-up, an assault, a case of arson, or what not. What society wants to know, at this juncture, is whether the man in custody did whatever was done.

With the substitution of a scientific program of treatment of the offender for the present effort to prove the accused guilty of having

committed the particular crime, with a certain predetermined punishment in view, some of the most serious complications of present court procedure would be removed. What society wants to know is whether the accused did what was done, not whether he can be proved to have done a particular thing of which he has been accused. What society wants to do is to protect itself from the recurrence of this or any other criminal act. It is concerned to know, first of all, whether the man is guilty. If he should prove to have done the thing in question, society then needs to know why and under what circumstances he did it. If this information can be secured, its next concern is whether the offender can be made worthy of liberty and a restoration of public confidence. If this cannot be effected, society must take steps to make itself secure against him for the future.

Present court procedure has had two things in mind—to determine the guilt of the accused, and to fix the nature and extent of the punishment. To accomplish these and at the same time protect innocence from injustice, the criminal courts have developed legal technicalities which as frequently as not prevent the accomplishment of one or all of their objectives. By reason of this fact, persons who function in such courts must have qualified themselves by learning all of the tricks and niceties of procedure in order to come successfully through the complicated labyrinths of a trial and satisfy all of the requirements of legal tradition. Judges, attorneys, and court officials may do this successfully without knowing anything about the actual nature of crime and criminals.

To date, there is practically nothing in the training of lawyers, some of whom become judges, which qualifies them for dealing with criminals. With the exception of finding out whether the man in custody is the one who has committed the crime which has occurred, all the rest of legal procedure could be dispensed with without an iota of loss to society. All of the facts in the case which society wants to know and must know if it is to deal with crime effectively, can be ascertained by technicians without a particle of legal training.

With the socialization of criminal procedure, the question of punishment can be omitted from consideration. With punishment goes much of the notion of guilt. There remain only the problems of making sure the person in custody is the offender, of determining what is best to do with him. These are jobs for technicians, for which the average judge, attorney, and juror are as unqualified as they are for the practice of medicine or the making of watches.

In the place of our present criminal trial, therefore, a scientific program would substitute a group of men trained in criminology, sociology, and the technique of weighing evidence. Their number should include psychiatrists and physicians, in order that the investigation should include a thorough clinical examination as well as the weighing of all the scientific and social evidence accumulated by the expert police. Both society and the accused would be far safer in the hands of such a group of specialists than either is at present in the customary jury trial.

The substitution of such a body with legal powers to determine the facts in the case for the present criminal court is probably not to be hoped for at the present or in the near future. No doubt we could accomplish something of the same result if we insisted upon the socialization of the legal profession and introduced the professional jury and the intelligent and non-partisan use of clinicians for the study and disposal of the offender. Such a program has the advantage over a more scientific one of being achieved piecemeal. It might pave the way for the ultimate adoption of an entirely scientific method.

The jury, however, as employed at present, has outlived its usefulness. It should be abandoned at once for a small group of paid technicians, trained to consider evidence and make scientific deductions from it. Such a change would have a salutary influence upon the criminal trial. Most of the cheap and reprehensible tricks of lawyers for befuddling jurors would be abandoned, for such a group of experts could not be imposed on in this manner. This would tend to speed up trials immediately and would, no doubt, eliminate other evils as well.

Social and clinical evidence should be given equal weight with the "legal evidence," and informal procedure would provide a better opportunity for the investigators to weigh all of the factors in the case. The element of a contest, what Hobhouse calls "battle by purse instead of battle by person," should be eliminated. No one officially connected with the investigation should have any other interest in the outcome than the learning of the truth and the disposition of the case in accordance with the best interests of society.

The proposal to provide a public defender in criminal trials who shall be equal to the prosecuting attorney is a makeshift to strengthen a weak spot in a faulty system. The prosecuting attorney should have no more interest in the conviction than he has in an acquittal. This would be true if the investigation were solely for the purpose of learning

the facts. The presence of legal men at such a hearing, either as judge or as attorney, should be solely for the purpose of keeping the proceedings legal. Unless qualified by other than legal training, they should have no authority to influence the decision of the technicians or to determine the final disposal of the case.

Social Treatment of the Offender

Let us assume that our case has progressed to the point where it has been determined, by scientific processes, that the man in custody is the perpetrator of the crime in question. In the course of the investigation we should have learned the man's mental and physical conditions and their relation to his crime. If a correction of his condition gives hope of his restoration to society, it should be undertaken. Whether his menace to society is due to mental or physical condition or his attitudes, he should be restored to society when the causes of his anti-social behavior have been corrected, and not before. Those offenders whose physical or mental condition or anti-social attitude cannot be corrected should be permanently segregated, regardless of the gravity of the offense which brought them into the hands of the law. The sole object of such segregation should be the protection of society. The idea of punishment, in its traditional form, should not enter into the treatment.

It is likely that segregation would have to be resorted to only in a relatively small number of cases. Other means should be resorted to for treatment of those persons whose menace to society is not sufficiently great to warrant the extreme measure of permanent detention. Pathological individuals would find asylum in institutions for the insane and feeble-minded. Many diseased criminals would be cured. Hosts of minor offenders with wrong attitudes could be adjusted to society with proper supervision and be required to make amends for the damage which they have done to individuals. Proper precautionary measures taken by the schools, the juvenile courts, social and health workers and the police should greatly decrease the number of habitual offenders and lessen the need for extreme measures.

Adaptation of Penal Machinery

The substitution of treatment for punishment would involve an adaptation of our penal machinery to the new methods. Places of detention will be necessary for persons awaiting a disposal of their cases and during the period of investigation. Some institution similar to our workhouses will probably be necessary for the supervised employment of hosts of irresponsible and inefficient persons. Wherever possible, treatment should be outside of an institution, with regulated and supervised behavior, similar to but much more proficient than parole as generally employed. Probation should be greatly improved and extended.

For those offenders whose menace to society is grave, custodial treatment and observation will be necessary for a relatively long period of time. New York has long had under consideration a plan for the organization of its prisons as follows:

From the community all felons would be sent to an observation prison for an indefinite period. The organization of this prison should consist of the administrative department, a medical department, a psychiatric clinic, departments for educational and vocational guidance as well as religious guidance; the administrative department, after a sufficient period of observation, to have power to make a disposition of the offender's case, the following possibilities being open:

1. Normal prisoners capable of learning a trade to be sent to one or two industrial prisons.
2. Normal persons suited to agriculture to be sent to a farm prison.
3. Insane delinquents to be sent to a prison for the criminally insane.
4. Defective delinquents to be sent to a custodial institution.
5. Psychopathic delinquents to go to the custodial institution for the defective or to the prison for the criminally insane.

All commitments to these specialized prisons to be indeterminate, with the possibility of release to the general community through parole agencies when it is considered socially practicable. Where his release is considered socially dangerous, the individual is to be restrained permanently.

The success of such a program would depend upon the extent to which it might be carried out scientifically. In each of the specialized institutions the staff should be composed of persons qualified to handle the particular type of offender committed to it. The use of the parole as a practical method of emptying the institutions to make room for more admissions would, of course, vitiate the entire program. In such an event a program of this character would have little advantage over the present system, except the careful observation of the prisoners in the receiving prison and the segregation and specialized treatment of the pathological and defective offenders.

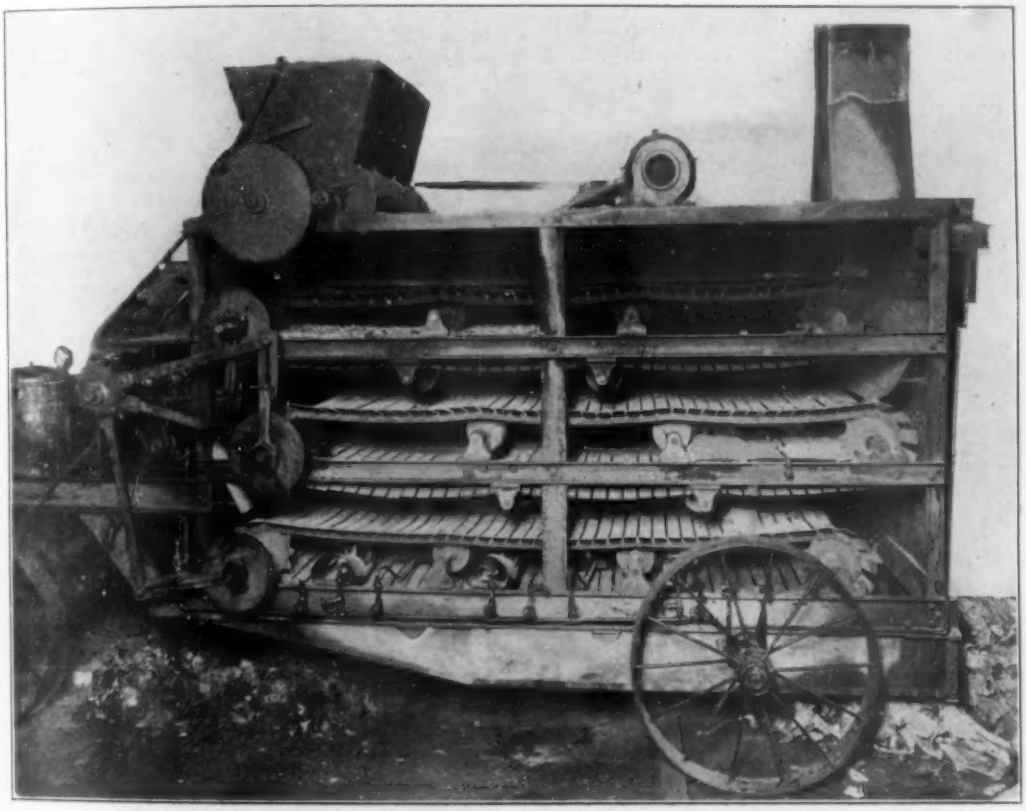
Garbage Incineration for Small Cities

By H. V. Pedersen

Formerly Sanitary Engineer, State Board of Health, Des Moines, Iowa

THE majority of cities of 15,000 people in Iowa, as well as those in many other states, make some pretense of collecting and disposing of the type of waste commonly known as garbage. The manner in which the garbage is collected is practically the same in all cases, at least in Iowa, although the various communities have adopted different systems of paying for the service rendered the public. Some cities own and operate garbage collection vehicles and pay the cost of collecting the garbage out of city funds. Other cities license certain individuals to collect the garbage and permit them to charge the property owner for the service. Other cities contract for the collection of garbage with certain companies at so much per ton. Regardless of the particular system which any city has adopted, however, the garbage in all cases is picked up by collectors and dumped into specially prepared vehicles moving up and down streets and alleyways.

Four outstanding methods of disposing of garbage have been worked out and tried with various degrees of success in Iowa. The most common method of disposing of garbage is by burial or by means of what is also called "the sanitary fill." The garbage is hauled to the nearest low-lying out-of-the-way location, dumped in layers of various thicknesses, and then covered over with ashes or dirt. Many acres of otherwise worthless property have in this manner been utilized and converted into desirable industrial sections or into lakeshore parks. Some cities are very favorably located and have many acres of such land at their disposal which can be utilized for sanitary fill. These cities find this method of disposal satis-



SIDE VIEW OF FIRST MODEL OF PORTABLE INCINERATOR, SHOWING DRYING-, TRAVELING- AND BURNING-GRATES

factory, providing they maintain the fill in a proper manner. The very nature of the sanitary fill requires that it be maintained carefully and be under strict supervision at all times to protect the nearby thickly populated areas against the possibility of increased numbers of flies and rodents. Much less favorably located communities have found that costs of disposing of garbage by burial are excessive because of long hauls or cost of maintenance.

The other three methods of disposal are (1) incineration or destroying the garbage entirely by fire, (2) reduction, or converting it into by-products such as fertilizer, etc., and (3) feeding it to hogs. No attempt will be made to discuss these methods in detail, favorably or otherwise. Attention is simply called to the fact that of those cities making any attempt to take care of garbage in Iowa, four dispose of it by incineration, two by feeding to hogs, one by reduction, and the rest by burial or a combination of burial and hog feeding.

The majority of Iowa cities of less than 15,000 people make little or no attempt to collect and dispose of garbage as a municipal affair. Each family or place of business must either burn or haul its garbage away or pay from one to ten dollars a month to have some individual perform this duty for them. Some of our smaller cities go as far as to provide a dumping-ground, but pay little attention to its maintenance. Local boards of health in most cases have adopted sanitary rules and regulations, but these regulations are seldom observed, and, as a result, the majority of such burial grounds or public dumps become places of filth, eyesores and natural breeding-places for rats and flies and, in many cases, constitute a health hazard.

The objection to a municipally owned and operated garbage collection and disposal system in the smaller cities has been the cost. Every community, and practically every individual in each community, admits that garbage must be disposed of. If garbage were to be strewn around on back lots or in alleys, without respect for the principles of sanitation, it would not be long before such a place would be unsatisfactory for human habitation.

The proper disposal of garbage should be recognized as one of the important factors in community sanitation, but it is usually given less attention than any other civic problem and the discussion of this topic often ends in heated arguments and disputes. The public seems to object to paying taxes to have the city take care of its garbage properly, but will pay many times as much to have someone else dispose of it in an improper way. This public attitude is probably due to the fact that many city councils have failed miserably to handle the garbage situation. Large sums of money have been spent with very little result. So many promises have been made that have turned out to be only expensive gold bricks, that it is little wonder that the public has lost faith and refuses to be hoodwinked. It would hardly seem just, however, to accuse the fair-thinking person of believing that an economical and practical system to take care of the garbage problem will never be worked out during this age of machinery, when the need of such a system is so apparent.

New Portable Incinerator

In an effort to create an incinerator particularly for small communities, an Iowa inventor has developed a new type. The device consists of three movable conveyors arranged one above the other, traveling in opposite directions and constructed on the body of a truck. The construction is such that the packages of garbage are torn into small bits and spread over the first conveyor or dryer, which is at the top of the heating chamber at the front, and are conveyed to the rear of the machine where they fall to the second conveyor directly below. The second conveyor carries the garbage the entire length of the machine back to the front and discharges it upon the third conveyor or traveling grate. This grate is provided with oil spray burners which incinerate the garbage to an ash. The ash is carried by the third conveyor to the rear of the machine, where it is deposited in the ash-pan.

The heat developed can be regulated by adjusting the oil burners, and the rate of drying and burning can be regulated by changing the speed of the conveyors. The material travels 16 feet on the drying-conveyors and 8 feet on the burning-grate. There are 65 square feet of drying-surface and 26 square feet of burning-surface. It has been estimated that it will cost less than 50 cents per ton of garbage in fuel to operate this incinerator.

The idea back of this development is to create a device for burning garbage during the process of collection in order to eliminate the long haul to some out-of-the-way dump or centralized point. The device is light and can readily be transported by means of a team or a tractor. Demonstrations have shown that garbage can be burned to an ash at the rate of 5 tons per day of 8 hours without causing a nuisance from either smoke or odors. If the device is perfected, it should fill a long-felt need for an inexpensive method of disposing of garbage.

Lafayette's Successful Efforts to Provide Free Municipal Parking Space

By A. R. Ross
Mayor, Lafayette, Ind.

IN attempting recently a solution of the acute traffic and parking situation confronting Lafayette, an ordinance was first enacted establishing four "through streets" parallel to Main Street and encouraging traffic to use these streets. The next measure taken up for consideration was that of a limited-time parking ordinance to cover the more congested business districts, with one- and two-hour parking limits, according to the importance of the street. Early in the consideration of this problem we were confronted with the advisability of providing a free parking space for long-time parking, in order that the enactment and enforcement of a limited-time parking ordinance should not cause residents of the country districts to go to small villages and stay away from the county-seat because of no available place for parking their cars while in the city. As a solution of this problem, an option was secured on property located between the two bridges crossing the river, and easily accessible from both, to be used as a municipal parking ground. The plan involved, in connection with the parking ground, a small building equipped with toilet facilities for both men and women, a free checking room for convenience of the patrons, the whole parking space to be encircled by a fence and in charge of a custodian, to render needed service to visitors to the city and guard against theft of automobiles. The City Council authorized a bond issue of $52,000 to cover the purchase and equipment of this parking ground.

We immediately encountered opposition, almost wholly of a political character, which resulted in the taking of an appeal to the State Board of Tax Commissioners by a group of local remonstrators. A public hearing was held by one of the State Tax Commissioners. Not one shred of evidence was submitted by the remonstrators to sustain the points included in their remonstrance and the large audience of local business men who were in attendance signified that they were very much in favor of the proposed bond issue. The attorney for the remonstrators raised the legal point that a City Council did not have the power to authorize a bond issue for such a purpose, but the State Tax Commissioner stated that that was a question for the court to decide, and on the merits of the proposed bond issue for meeting a very great public need, the State Board of Tax Commissioners subsequently approved the bond issue.

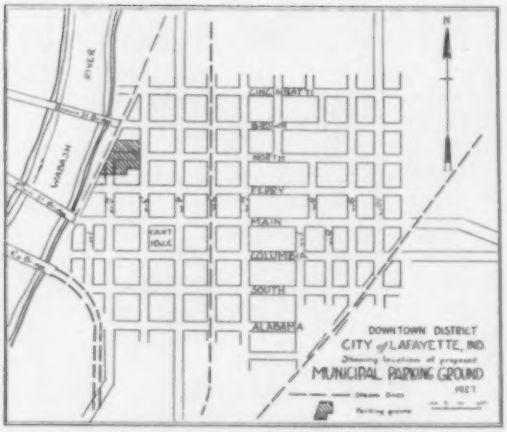
The law under which the city administration proceeded in its effort to secure this much-needed assistance in solving the parking problems was "An Act Concerning Municipal Corporations—Approved March 6, 1905, under Section 92," in which the following power is granted to the Board of Public Works: "to condemn, rent or purchase any real estate or personal property needed by any such city for any public use." It would be difficult to conceive of anything that could be more clearly established as constituting a public use than this plan of providing a parking ground for a large number of automobiles in order to make it convenient for out-of-town shoppers and long-time visitors to park their cars, and to facilitate the enforcement of a limited-time

By-Passing Tourists Around Congested Business Centers

In a paper presented at the Thirteenth Annual Road School, held at Purdue University, on Jan. 17-21, Mayor Ross discussed parking and other phases of the traffic problem of Lafayette. In urging cooperation between state and city officials for traffic relief, the speaker said:

"In this connection it might be said that it is to the very material advantage of cities to cooperate with the State Highway Commission in by-passing tourists from their congested business centers, and not be misled by any sentiment of local merchants in their mistaken desire to have traffic routed through the center of the town. Most tourists wish to go through the city and appreciate the opportunity of doing so without being delayed by passing through the congested district, and those tourists who wish to stop will do so regardless of how the through traffic is routed."

pose of it in an improper way. This public of garbage.



SHADED PORTION SHOWS THE PROPOSED PARKING GROUND

The railroad bridge, and the Main Street and Brown Street bridges are shown. The Main Street bridge now carries about 95 per cent of the motor traffic. It is planned to by-pass through tourist traffic across the Brown Street bridge to relieve the present congestion on Main Street. The parking ground, between these two important means of travel and but two blocks from the public square, seems ideally located

parking ordinance, to better meet the needs of the customers of our local business men, and to clear our local streets from the constant menace encountered by our Fire Department in making its runs to fires.

When the bond issue was advertised for sale, the different bond houses submitted their bids subject to the approval of their attorneys. The attorneys of the bond company who were the successful bidders, advised the bond houses against purchasing the bonds, because of the fact that Lafayette was the first city in Indiana to issue bonds for the purpose of a municipal parking ground and that there was no court decision establishing the fact that this constituted a public use within the meaning of the law. These attorneys did not question the very great need of Lafayette for such a parking place to relieve the congested business streets, and they did not question that such a project constituted a public use within the meaning of the law. But in the absence of a court decision definitely establishing that fact, they would not recommend the purchase to the bond company, because the small commission it would receive would not justify it in placing in the hands of any customer a bond issue that was to be involved in litigation.

To overcome this objection, we secured the introduction into the Indiana State Legislature of a bill which ratifies and confirms the action of our City Council in enacting the necessary ordinances involved in authorizing a bond issue for a municipal parking ground, and which also ratifies and confirms the public hearing held by the State Board of Tax Commissioners, and furthermore authorizes any city in the state of Indiana to issue bonds for the purpose of financing a municipal parking ground. This bill passed the Senate with but five opposing votes, and passed the House of Representatives with no votes in opposition, and as it contained an emergency clause, it became a law as soon as it was signed by the Governor and registered with the Secretary of State. The bill is now a law, and at the time of this writing we are going through the necessary process involved in legally advertising our bonds for sale, with the date to receive bids, March 21. We feel that we can now proceed with no fear of having this bond issue further obstructed.

Greatest Field for the Bus in Urban Transportation Is in High-Speed, De Luxe Service at Higher Fare

SPEAKING on the subject of "The Bus in Urban Transportation," R. N. Graham, Manager of Railways, Pennsylvania-Ohio Electric Company, operating 57 busses in city service, told the February meeting of the Metropolitan Section of the Society of Automotive Engineers that the greatest field for the bus is to be found in special, supplementary service from the suburbs to the center of the city at a comparatively high rate of fare, thus furnishing mutual conveniences to those customers who do not object to the higher charge.

"The history of present-day transportation in all American cities," Mr. Graham declared, "shows that while the community as a whole may fight to the last extremity for a low rate of fare, there are certain elements who pay little attention to the cost of transportation as long as it is speedy and comfortable. These people are now using their private cars to go back and forth to their jobs, paying not only for the depreciation, upkeep, and operation of their cars, but also a substantial sum to house them in garages during the day. The modern bus with its high average rate of speed exactly meets the needs of this class and, at a fare approximately 25 cents a person, would be made a profitable transportation medium." There is hardly a city in the United States of 150,000 population that could not well support this service, he said.

Mr Graham defined the place of the 25- to 29-passenger bus in city service as, first, on routes not exceeding 3 miles where traffic is dense; on longer crosstown routes where there is intermediate traffic; on routes reaching territory unserved by street cars and in high-speed, de luxe service at a special fare.

In considering the use of various types of vehicles in urban service, it must be remembered, he pointed out, that city public transportation in this country is conducted on a flat fare and that the maximum capacity of the vehicle is only used once on a single trip. These conditions are not characteristic of urban operation in foreign countries, he said.

Separate Sludge Digestion

By Jerry Donohue

President, The Jerry Donohue Engineering Company, Sheboygan, Wis.

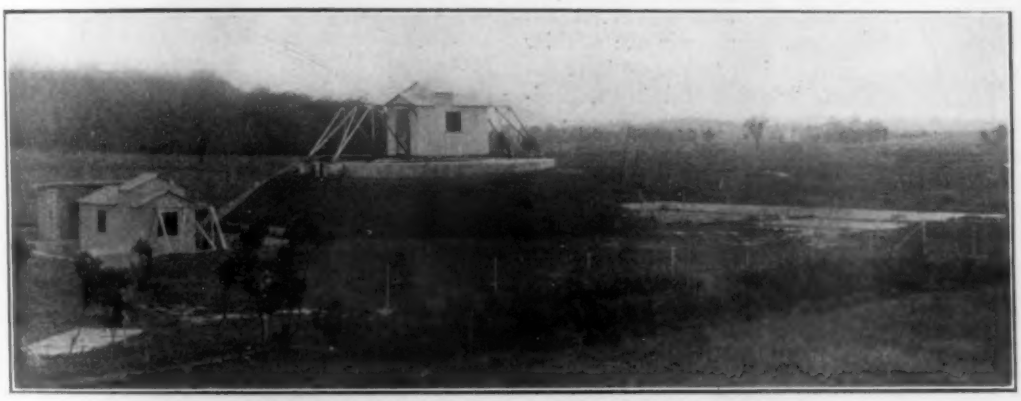
SEWAGE treatment may be divided into three parts: first, tank treatment, consisting of sedimentation and the removal of the solids; second, digestion, which provides for the decomposition and disposal of the solids; and third, filtration, or other oxidizing treatments, which provides for the oxidation of the effluent from sedimentation. This paper will deal primarily with the second process, namely, the digestion of the sludge, and its separation from the liquid, as well as the subsequent drying of the sludge and preparing it for removal. The fact that the solids are separated by sedimentation from the liquids and digested in a separate tank has originated the term "separate sludge digestion."

Separage sludge digestion has been adopted by a number of Wisconsin municipalities, and there are many points in favor of this type of plant, especially for smaller communities where the operation of the plant is often neglected and generally left to the street commissioner, or to some other city employee who has absolutely no knowledge of what the plant is supposed to accomplish or how it should be run. The Wisconsin State Board of Health has performed valuable service in requiring that all municipalities make out periodic reports covering the operation of their sewage disposal plants. In this way the State Board of Health can offer valuable suggestions as to operation and assist the municipal authorities in giving proper instructions to operators. In describing the separate sludge digestion type of plant, I shall confine my description to two plants, one at Hartford, Wis., which was built in 1924 and put in operation in August of that year; and the other recently completed in Antigo, Wis. In addition to the Hartford and Antigo plants there are three others in the state all of which have given satisfactory service.

Study of the Hartford, Wis., Plant

The plant in the city of Hartford has been visited since 1924 by engineers from different parts of the United States. The Wisconsin State Board of Health made an examination in 1925 and a report in August, 1926, which covered the findings of several inspection trips. This report is summarized as follows:

1. The plant is being carefully operated.
2. The sewage waste in Hartford is stronger than normal residential sewage.



SEWAGE TREATMENT PLANT AT HARTFORD, WIS.
This plant has separate sludge digestion, a Dorr clarifier and a Dorr digestor

3. Trickling filters should be added to reduce the organic load in the clarified sewage before discharge into the stream.
4. The plant is accomplishing all that could be reasonably expected of it. The method of sludge treatment by means of separate sludge digestion is giving excellent results.

The fact that the plant does not produce a satisfactory effluent does not necessarily imply that separate sludge digestion is not a successful method of treatment, for it was contemplated, when the plans were presented and approved, that either activated sludge or sprinkling filters would be added and as soon after the completion of this first unit as possible. In fact, recommendations have already been made to provide this additional treatment, and the

city has purchased an area of sufficient size to meet all the demands of such expansion.

The city sewage first passes through a bar screen consisting of flat rods spaced ¾-inch apart, set at an angle of 45 degrees. The screenings are removed twice daily by raking and the screenings are deposited on the sludge bed. The sewage then passes to the clarifier, which is a 30 x 30-foot concrete tank with a side water depth of 5 feet 2 inches and a center depth of 7 feet. Suspended in the center of this clarifier and supported by a steel truss is a mechanism with plows attached which operate near the bottom of the tank, the floor of the clarifier having a slight inclination toward the central cone. The Dorr mechanism is driven by a 2-horsepower motor which revolves the plows at the rate of a complete revolution in eight minutes. The detention period in the clarifier ranges from 1¾ hours during the maximum flow to 3¾ hours during the minimum flow, averaging 2¾ hours. The sludge settling out is continuously scraped to the center by the plow scrapers and deposited in the center cone, from which it is pumped. The period of revolution of the scrapers is long enough to prevent the formation of eddies or currents in the clarifier and, so far as our experience goes, we have not found that this moving mechanism in the clarifier causes any of the suspended solids to pass out with the effluent.

Adjacent to the clarifier is a pump-room which houses a Dorrco diaphragm sludge pump. The suction of this pump is direct-connected to the bottom of the cone in the center of the clarifier. The sludge pump is driven by a 2-horsepower motor, to which it is connected by a silent chain drive. It is capable of discharging 40 gallons per minute against a 20-foot head. Experience has demonstrated that the operator is more likely to make the mistake of running the pump too much than not running it enough. Thirty minutes' operation a day is sufficient to remove the accumulated sludge from the clarifier. The night flow of sewage is permitted to pass through the clarifier without operating the pump at all; the sludge accumulates at the bottom and is pumped in the morning as soon as the operator starts the plant.

Sludge Digestion Tank

The sludge digestion tank is a circular concrete tank, the bottom of which is 5 feet below the surface, and the top elevated above the sludge bed in order to have a head of 10 feet on the discharge of the sludge pipe. This digestion tank is 38 feet in diameter with an effective depth of 15 feet at the outside and 15 feet 9½ inches in the center. The digestor is equipped with a Dorr mechanism which revolves at the rate of one revolution in sixteen minutes. This mechanism keeps the sludge stirred up and the scum broken so that gases may escape from the digesting sludge. The capacity of the digestor is based on 3 cubic feet per capita for an ultimate population of 5,500, but with the present population of Hartford is in excess of this figure. The incoming sludge from the Dorrco pump is distributed over the surface by means of a channel which rides with the circulating mechanism. This affords a uniform distribution of the sludge and keeps the scum broken.

Sludge Bed

The sludge bed is well underdrained, is enclosed by concrete walls, and is subdivided into four sections to permit the withdrawal of sludge at four separate intervals. The total area of the bed provides a capacity of 0.6 square feet per capita. The underdrainage system consists of vitrified tile supported by a concrete floor, the tile being shaped like a horseshoe, and a 2-inch vitrified brick with ¼-inch recesses covers the opening of the tile and forms the floor of the sludge bed. There is a layer of 12 inches of coarse stone at the bottom, and 6 inches of finer stone above it, and the surface of the bed is covered with 6 inches of sand. The sludge pipe connected to the bottom of the digestor is controlled by a gate-valve. This discharges sludge into a trough leading to a central distribution chamber, from which it may be directed to any one of the four beds.

Removal of Suspended Solids

Several determinations of the removal of settleable solids by the clarifier were made during the first year's operation. In April, 1925, a Dorr Company engineer, using Imhoff tubes with one-hour settlement, found 94 to 99 per cent of settleable solids removed. The Sanitary Engineering Department of the Wisconsin State Board of Health, testing by weight, found a removal of 73 per cent, and the official report contains the following information:

Total solids in raw sewage—1,086 parts per million
Suspended solids in raw sewage—302 parts per million
Suspended solids in tank effluent—82 parts per million
Percentage of removal by tank—73 per cent

The percentage of removal of the suspended solids varies with the time that the test is taken. The high removal may be attributed to the extremely strong domestic sewage, but a subsequent analysis practically confirms the test made by the Sanitary Engineering Department. These subsequent tests showed a removal of suspended solids varying from 55 to 73 per cent during a full week's test.

Sludge Inoffensive

Since this plant was put into operation, sludge has been withdrawn four or five times. The fact that the sludge is not offensive permits the city to withdraw the sludge during the summer. At no time have complaints been registered by adjacent landowners. Under favorable weather conditions the sludge cracks in thirty-six hours and can be spaded and removed from the bed in from five to seven days. The Superintendent of Parks has experimented with the sludge as a fertilizer and has very conclusively demonstrated its value by using it around young trees in the park, where a stimulated growth is already in evidence.

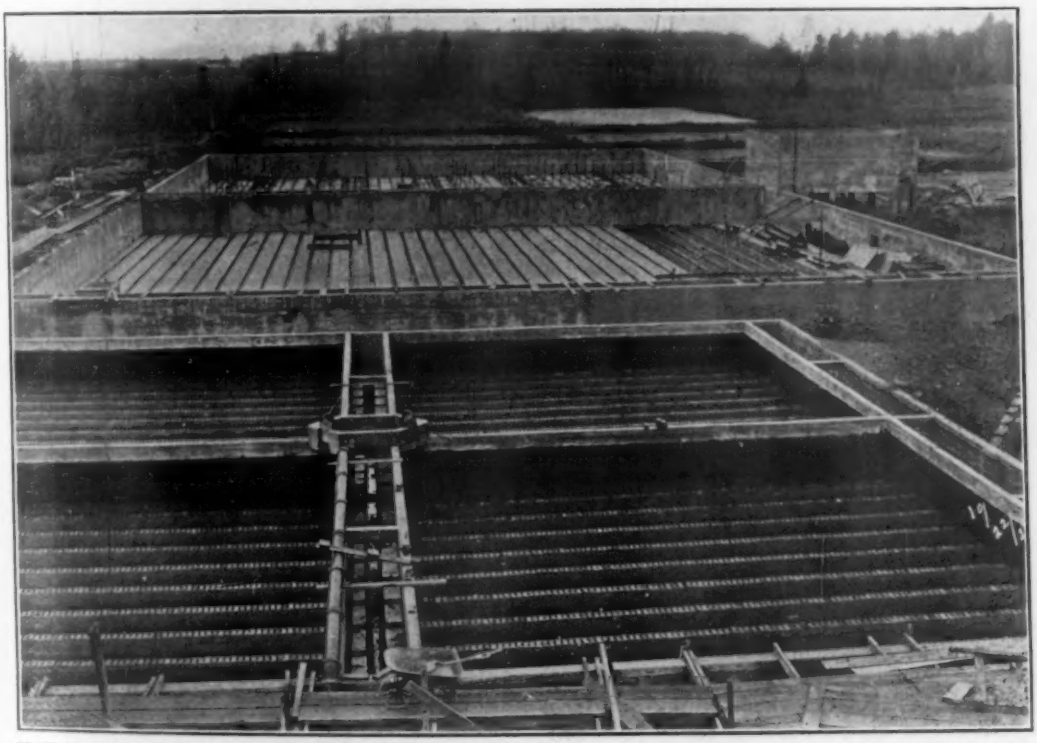
Power Costs

Accurate cost records of the amount of current consumed by all the motors at the plant during the fiscal year ending September, 1925, showed that a total of 5,179 kilowatt-hours were used, at a total cost of $279, or an average cost of 79 cents per day for the total power consumed in operating all the motors and lighting the plant. In addition to this power cost, there should be charged against the operation of the plant for that period approximately $350 for city labor and a portion of the Water-Works Superintendent's time devoted to the sewage disposal plant operation. This makes a total operating charge of $629 a year. This is less than the estimated cost of operating an Imhoff tank, for a much greater sum would have to be expended in removing sludge, cleaning the tank, and keeping it in proper shape. The actual cost of operation since reducing the time of operating the sludge pump has been reduced to 50 cents per day, and the current cost for the plant's operation now averages $15 per month. This will reduce the total operating charge against the plant to $535 per year.

A comparison of the total cost of plant and operation of the plant built by the city of Hartford with the two-story type considered by the officials of that city, is thus summarized:

Two-Story Imhoff Tank, Requiring Deep Excavation	
Estimated cost	$35,000
Annual interest charge	2,100
Operation	600
Total annual cost	$2,700
Separate Sludge Digestion Type	
Actual cost	$22,000
Annual interest charge	1,320
Operation	630
Total annual cost	$1,950

Ratio of total annual cost of separate sludge digestion type to two-story type, 72 per cent.



SLUDGE BED AND SPRINKLING FILTERS FOR ANTIGO, WIS., SEWAGE DISPOSAL PLANT, UNDER CONSTRUCTION

The concrete in the sludge bed has been treated with asphalt to protect it against deterioration

HEATING-COILS AROUND THE INSIDE OF THE SLUDGE DIGESTOR, ANTIGO SEWAGE DISPOSAL PLANT

The Antigo, Wis., Plant

The city officials of Antigo, Wis., after studying the plant at Hartford and comparing its operation and performance with the results obtained in their old disposal plant, accepted the recommendation of their engineer and approved plans for building a separate sludge digestion type of plant in Antigo. The clarifier and digestor have been designed along the same general lines as the Hartford plant, but some changes have been made to correct some of the minor difficulties experienced at Hartford, and the fact that Antigo is situated in the northern part of the state prompted the designers to provide better protection against cold, and the additional feature of applying heat to the digesting sludge. The digestor has a tight cover made up of a reinforced concrete slab which is carried by the same truss supporting the digestor mechanism. The joint between the roof of the digestor and the sidewalls is constructed for expansion, and a copper seal is inserted to permit free movement of the slab without opening a crack and allowing leakage. The groove on either side of the copper plate is filled with asphalt.

In the center of the roof is a steel gas dome in which all the gas escaping from the digesting sludge is collected. From this dome the gas is piped to a gas burner in the pump-room and here used as fuel in heating the building and also used in heating the sludge in the digestor. The amount of gas that will be available for fuel will vary with the temperature of the digesting sludge, but ⅓-cubic foot per capita per day is a fair estimate of the amount. This will be equivalent to 200 pounds of coal per day in heat value. For three months there will be a shortage of fuel for heating this mass of sludge, but for nine months the gas will provide all the heat required to maintain a temperature of 65° F in the digestor. Actual measurement of gas through a meter for a period of one month shows an average daily volume of 2,400 cubic feet, or 4 cubic feet per capita. A coal and wood boiler is connected in to boost this temperature in the heating coils when the amount of gas is insufficient.

Advantages of Separate Sludge Digestion

The following is a summary of the advantages of separate sludge digestion over most of the other types of sewage disposal plants:

First, both clarifier and digestor can be built partially above ground and on account of their shallow depth are much cheaper than the two-story type of tank, reducing building cost.

Second, the Dorr mechanism installed in this type of plant does the work that must be done by hand in other types. This compels systematic, continuous operation, preventing neglect of the plant, which should increase the efficiency of the plant itself.

Third, the type of plant is flexible in that the first construction does not limit the relation between settling and sludge storage capacity. Either may be expanded without the expense of enlarging both, and a proper balance is thus maintained between the settlement of the sludge and its digestion. Its operating cost is low on account of the small motors used.

Fourth, the elevation of the sludge in the digestor permits a gravity discharge to a well-drained sludge bed (many sludge beds have heretofore been built in low areas with poor drainage facilities, which has prevented the sludge from drying, thus retarding operation.

Fifth, separate sludge digestion makes possible the collection of gas in the digestor, and this gas when burned eliminates odors and conserves fuel where the plant uses heat.

Sixth, this type does as much and more in separating the solids from the liquid and keeping them separate, making it easier to treat either the solids or the liquids after separation.

Seventh, experience with the separate sludge digestion plants built at Hartford and Kiel, Wis., emphasizes the value of mechanical operation and the importance of intelligent operation, for the efficiency of any sewage disposal system depends as much upon the operator as upon the designer. A mechanical plant, however, operated by a man capable of exercising ordinary common sense, will give far better results than a non-mechanical plant which is bound to be neglected, especially in smaller cities where the sewage disposal plant is regarded as a necessity only because the State Board of Health demands a certain standard to prevent stream pollution.

ACKNOWLEDGMENT.—From a paper read before the American Society for Municipal Improvements, at Washington, D. C.

Methods of Apportioning Special Assessments

By Thomas R. Agg, C. E., and John E. Brindley, Ph. D.

IT is much easier to specify that the cost of an improvement is to be assessed according to benefits than it is actually to spread an assessment in strict conformity with that principle. No single rule can be formulated that will fit all cases, and no two assessments can be spread in exactly the same way. There are a few mathematical processes that have been widely used in connection with assessments. These or some combination of them will serve to enable the assessor to distribute the cost in a logical and equitable manner, and he can then study the resulting rates in the light of the exact situation with reference to benefits to each parcel of land that is assessed, and thus arrive at a final assessment that is fair and just.

The lateral distance to which the benefits extend when a street is improved is problematical, but fortunately for the assessor, this question is generally settled by statute. For ordinary street improvements such as paving or curbing, the statutes generally provide that the benefited area to be assessed may not extend more than half-way to the next parallel street. This is sometimes limited still further by providing that, if two parallel streets lie at some distance apart, the assessment may not extend more than some statutory distance, say 300 feet, from the improved street.

Apportionment of assessments should take some account of the value of the property assessed. Needless to say, this is a very important consideration if assessments are to be spread with a reasonable degree of justice. The value at which property is assessed for general taxation is often very far from true value and is of little use in this connection. The really important thing is not the present value, however determined, but rather the value including that increment resulting from a given improvement. The problem really resolves itself into determining whether the parcel of land under consideration is of such a nature that it will respond to the effect of the improvement by increasing in value, or will in fact be benefited. It is very seldom that road or street improvements fail to increase the value of the assessed land, but the influence of the improvement may not manifest itself for several years after the improvement is completed.

A street along which were small shops and dwellings of the "flat" type was widened to form an arterial way some miles in length. For some months after the street work had been completed, the buildings presented a most forlorn appearance. The front portion of the buildings had been cut away to secure the added width of street, and many of them were gaping openings, as though the buildings had been sliced with some giant and none-too-sharp shears. In a few years, however, smart shops, automobile show rooms, and other similar commercial enterprises had taken over the premises, and new and improved building fronts had converted the street into a most imposing thoroughfare. There could be no doubt that a benefit had accrued to the property, but it required several years for the situation to work out.

Within the zone of benefits prescribed by statute, or established by the assessor in conformity with the statutes, the assessor must distribute the assessment in a manner that is equitable and uniform and at the same time insure that the total of the assessment is equal to the part of the cost of the improvement that is to be paid by the property owners through these special assessments. The portion of the cost that is assumed to represent general benefits is met by some general or special tax.

If an assessment district is of any considerable magnitude and consists of numerous parcels of land of various shapes and sizes, some

Determining Area and Amount of Benefits from Highway Improvements

"Highway Administration and Finance" is the title of a new book by the authors of the accompanying statement, which comprises a part of Chapter IX, on Special Assessments. Other portions of the chapter discuss the origin and development of the theory, the legal basis and fiscal status of special assessments, and assessment practice in the United States. The basic theory of the discussion is the principle that, when public improvements are financed through special assessments, costs to each portion of land should be apportioned, as far as possible, in accordance with said benefits.

The authors are Professor of Highway Engineering and Professor of Economics, respectively, of Iowa State College. The book is copyright, 1927, by the McGraw-Hill Book Company, Inc., New York.

mathematical system of distribution of benefits is indispensable. Otherwise, it will be impossible ever to complete an assessment in an equitable manner. There are several methods of performing the required calculations, and the particular one that is to be used will depend upon statutory limitations and the nature of the assessment district. Generally speaking, four factors are considered in estimating the benefit to a parcel of land—area, topography, the proximity to the improvement, and the actual value of the land. Of these, the third is usually left out of consideration, while a tentative assessment is being made, and the tentative assessment is then modified to relieve parcels of low value, if any such exist.

The following methods of distributing the assumed benefits are employed by various departments, and sometimes a combination of them seems to be preferable to any one. These methods should be considered merely as guides and are not to be applied rigorously unless the conditions justify doing so. Generally, some one of these will be entirely fair and readily applicable.

Front-Foot Rule

When assessments are spread to cover the cost of street paving, curbing, or sidewalks, it is the rule of many cities to consider that the benefits to any parcel of land vary according to the length of frontage of the parcel on the street that is improved. Where building lots are laid out at right angles to the street and all extend back about the same distance, this method is equitable and is quite easily applied. No account can be taken of possible benefits to parcels of land adjacent to the improvement but not abutting thereon ("back lots"), and in many cities the statutes do not permit assessment of adjacent parcels of land. The front-foot rule is difficult to apply to tracts of irregular shape and should not be used for them.

This method of assessment is not adapted to projects that include the widening of streets into boulevards or arterial ways, nor to projects involving the opening of new streets. The zone method or the benefit-factor method usually will be more satisfactory for these cases.

The front-foot rule will fail to distribute the benefits equitably in a residential district where diagonal streets form triangular or trapezoidal parcels with a high ratio of frontage to area. In a business district, the large proportion of frontage may be an asset, and an assessment by the front-foot rule may be entirely equitable.

The front-foot rule is seldom used for suburban and rural highway projects, and probably never should be employed in those cases.

Area Rule

It is seldom that assessments for municipal pavements are based wholly on benefits allocated in accordance with the area of the several parcels of land in the benefit district, but some districts are composed of plots of such dimensions that the benefits do vary substantially as the areas of the respective parcels of land in the district. If the portion of the city involved is laid out in lots of equal frontage and the depths of the lots vary, the area method of distributing benefits is equitable. The lots abutting intersecting streets may be shorter than those in the anterior of the block, through the rear portion's having been disposed of to form a new lot fronting on the intersecting street. While area should be taken into account in determining benefits, of itself it is suitable as the sole basis for assessment in only a small proportion of the districts met with in practice.

Zone-and-Area Method

In order to take into account the diminishing benefits on the parcels of land that do not abut on the improvement, and to recognize the variation of benefits with area, the zone method of distributing benefits is employed both for municipal street improvements and for rural and suburban roads. The whole area of the benefited district, the extent of which is generally specified by statute, is divided into zones parallel to the improvement, and to each zone is assigned a predetermined percentage of the total sum to be assessed.

Considerable latitude is allowable in the width of zone, and the assessor fixes that according to his best judgment. In city practice it is customary to make each zone correspond to the prevailing depth of the lots, although this is not vital. In rural highway assessments, the zones are usually fractions of a mile in width. If the assessable width were 1 mile on each side of the improved road, the zones might be ¼-mile wide, or even ½-mile wide.

The percentage of the total to be assessed on each zone is based on the assessor's judgment as to the rate at which the benefits diminish on lands at various distances from the improvement. Generally it is assumed that the benefits diminish as the square or the cube of the distance, but here, again, considerable latitude is given the assessor, who is expected to follow a rule that is equitable for the particular problem upon which he is engaged.

Benefit-Factor Method

To indicate the rate of diminishing benefits on the parcels of land more remote from the

ment. The problem really resolves itself into cels of land of various shapes and sizes, some

improvement, a curve is sometimes drawn to indicate in units of arbitrary value the amount of benefit to a parcel of land lying anywhere in the benefit district. If a benefit district on one side of a street has a width of 200 feet and on the other side a width of 250 feet, it is apparent that any lot that extends from the street to the limit of the district on the 250-foot side would receive greater benefit than one extending to the limit on the 200-foot side, because the longer lot contains more area per foot of frontage; but if the law of diminishing benefits is recognized, the additional benefit to the longer lot is not directly proportional to the excess in length. To arrive at some measure of the added benefit to the longer lot, it is first necessary to determine the law of diminishing benefits, or to assume a law that seems to be fair.

Let it be assumed that the assessor concludes that the benefits diminish as the square of the distance from the improvement, beginning at the property line of the street that is improved. For convenience, it is further assumed that the longest lot in the district receives 100 units of benefit per foot of frontage. (This might be 1 unit or 1,000 units if preferred, without invalidating the method.) In the example cited above, the maximum rate of benefit would accrue to a lot having a length of 250 feet. A curve is drawn to such a scale that the abscissæ represent feet and the ordinates units of benefit. One point on the curve is determined by the fact that a lot 250 feet long receives 100 units of benefit per foot of frontage. Another point is determined by the fact that the benefits are assumed to diminish as the square of the distance from the improvement; therefore, a lot extending 125 feet back from the street would receive 75 units of benefit per foot of frontage. In this way the units of benefit per foot of frontage accruing to a lot of any length can be computed and the curve is fully determined. Obviously, the number of units of benefit can be calculated by multiplying the number of units of benefit per foot of frontage shown by the curve, by the width (frontage) of the lot in feet. When this has been done for every parcel of land in the benefited district and all added together, a grand total of the units of benefit to the whole district has been obtained.

The cost of the improvement per unit of benefit is then obtained by dividing the total cost by the total number of units of benefit. The assessment for each parcel is obtained by multiplying the number of units of benefit accruing to that parcel by the cost per unit.

It should be apparent that an assessment which is spread in this way takes account of the area of each parcel of land, the frontage of each parcel, and the theory of diminishing benefits. The method is applicable to a wide variety of assessment district conditions and to various types of improvement. It may be used wherever the zone method would be suitable, and is more flexible than the zone system. It can be used to distribute the benefits resulting from the construction of arterial highways, boulevards, parks, playgrounds, or any other capital improvement assessable by the benefit method.

Combined Systems

The several systems of spreading assessments that have been described in the preceding sections may be used alone, but they are more often used in combinations. Areas and frontage are often considered together, and zone and area assessments are common. In recent years there has been a great deal of investigation of the effectiveness of various systems, and one result has been to decrease the use of any single system and to encourage the use of some combination of systems.

Recent Developments in Street Traffic Relief and Control

By Miller McClintock

is the title of an eight-page article in THE MUNICIPAL INDEX for 1927. This comprehensive article serves to bring up to date Dr. McClintock's important book on Street Traffic Control, published early in 1925.

Experience with Pavement Markings for Traffic Control

is given in an interesting table in the same volume. In compiling it information was secured from chiefs of police in 220 cities of over 10,000 population and from 128 in smaller places.

FIG. A—A CONTACT PRINT FROM AN ORIGINAL NEGATIVE OF AN AERIAL PHOTOGRAPH OF LONG NECK POINT, DARIEN, CONN.

The Making and Use of an Aerial Map of the Town of Darien, Conn.

An Aid to Highway Engineering, Sewage Disposal, Town Planning, Zoning, and Assessing

By Charles P. Rumpf, C. E.

Superintendent of Highways and Bridges

ALTHOUGH the town of Darien, Conn., had a more or less accurate outline map of its boundaries and roads, it felt the need of a more comprehensive map as an aid in its planning of highways and sewage disposal and for the use of the Town Planning and Zoning Commission and the Board of Assessors. The town is situated on Long Island Sound and has a suburban and residential character. It is approximately four by five miles in extent, with gently sloping hills not exceeding 250 feet in height, and has a very irregular shore line.

After some study it was decided that a map obtained by an aerial survey would be more desirable than one made from a ground survey, for the reason that the air map would show not only the roads and buildings but every other physical feature, such as trees, interior walls, small streams, and the complicated shore line; because the air map method would result in a great saving of time; because it was far less expensive; and because enlargements to any practical scale could be easily and cheaply obtained.

Competitive bids that were close and intelligent were received from several companies making a business of aerial mapping, and the contract was eventually awarded to Hamilton Maxwell, Inc., of New York City, on September 8, 1926.

As it was desired to have the physical features hidden as little as possible by trees, one provision of the contract was that the survey should be made not earlier than October 7, as it was hoped that some of the leaves would have fallen by that date; but that the survey could be made on the first suitable day after that date, as it was feared useful light values might be lost if work was deferred too late in the season. On an average there is only one suitable day a week for the taking of aerial

pictures. The survey at Darien was made at noontime on October 12, the airplane coming from its home field at Mineola, Long Island. The hopes for a thinned-out foliage did not materialize, and some of the walls are difficult to distinguish. The resulting picture, however, is more intelligible than would be given by a leafless condition of the trees, as the shadows from bare trees give the appearance of a multitude of small scratches.

The contract called for the delivery of the following items to the town of Darien: (1) a set of contact prints to the scale of 600 feet to the inch; (2) two sets of enlargements; (3) two key maps; (4) the original mosaic; (5) one copy of the original mosaic; (6) a mirror stereoscope; and (7) a set of contact prints to the scale of 300 feet to the inch with two sets of enlargements of these, covering a strip about one mile long by one-half mile wide over the center of Darien.

Contact Prints and Enlargements

The contact prints are made directly from negatives which are individual exposures taken at about 20-second intervals from an airplane flying at a height of 7,200 feet, with a camera using a lens having a focal length of 12 inches, giving a picture to the scale of 600 feet to the inch. The complete set of prints covers the entire area of the town and a generous portion of the adjoining towns. Each print is 7 by 9 inches in size and shows an area 4,200 by 5,400 feet. Each print overlaps its neighbor about 50 per cent both in a north-and-south and in an east-and-west direction. Figure "A" is a reproduction of one of the contact prints.

The two sets of enlargements were furnished to the scale of 100 feet to the inch. These enlargements are 28 by 39½ inches in size. One of these sets was mounted on muslin and bound in two loose-leaf books. It is planned to keep these two books in the Assessor's office, and the other set of unmounted and unbound enlargements will be kept in the office of the Highway Superintendent. These maps are surprisingly clear. A more common method in aerial mapping is to have the original negatives made to the scale of 800 feet to the inch and the enlargements to the scale of 100 feet to the inch, giving an eight times increase of the original; but study of the matter convinced the town that in spite of the extra cost of making the originals at 600 feet to the inch, the added clearness of the six times enlargements was worth the difference in price.

Figure "B" shows a portion of the town to three different scales: the upper map in the original being 600, the middle 300, and the lower 100 feet to the inch.

Making the Composite Map

Figure "C" is a reproduction of the index or key map. This is a diagrammatic sketch or outline made by superimposing the position of each contact print upon the map which the town of Darien already possessed. The con-

FIG. B (1)—CONTACT PRINT OF DARIEN RAILROAD STATION

FIG. B (2)—SAME AS ABOVE AT DOUBLE ENLARGEMENT

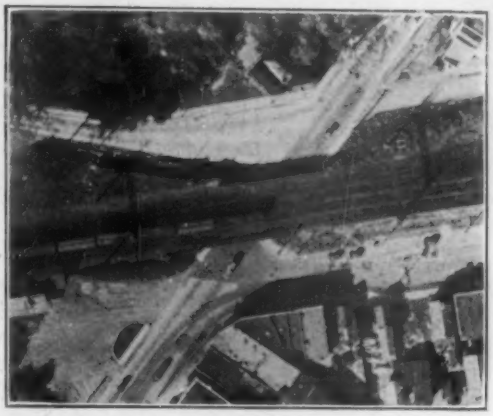


FIG. B (3)—PORTION OF THE SAME PRINT ENLARGED SIX TIMES

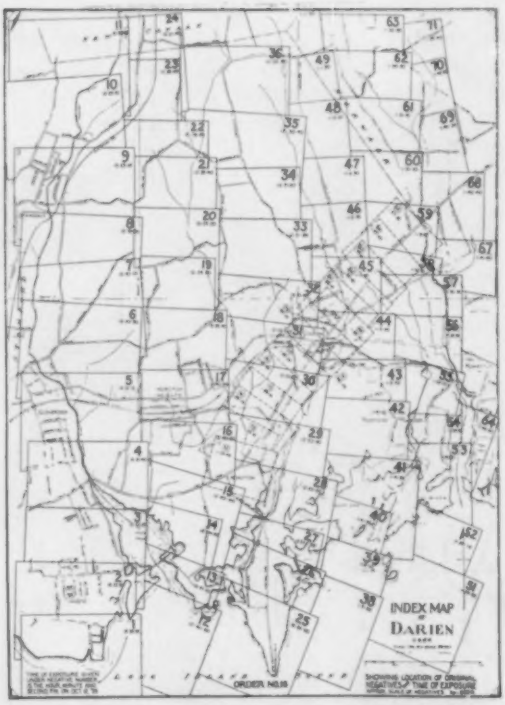


FIG C—INDEX OR KEY MAP OF DARIEN, CONN.

tract called for the flight lines to be made in a north-and-south direction in parallel lines, and always against the wind when the pictures were taken, to give a more uniform interval. It is interesting to note the difficulty the pilot had in keeping his lines parallel when the cross-winds at the shore were encountered. Particular attention is called to the innovation of having the exact time of the taking of each exposure recorded on the print. This was done particularly to determine the state of the tide, but this time information would also be valuable for interpreting the elevations from the length of the shadows.

Running diagonally over the center of the key map will be seen the position of the set of prints that was made to the scale of 300 feet to the inch, taken by the airplane from an elevation of 3,600 feet instead of the former altitude of 7,200 feet. From these negatives two sets of enlargements to the scale of 50 feet to the inch were made, giving additional detail over the more built-up portion of the town.

The method used in making the mosaic, or composite map, is to cut the heart portion from each of the corrected prints after they have all been adjusted to the proper scale, and carefully fit these pieces together by pasting on a background. This necessitates careful workmanship and accurate calculations that will not be described in this article. The contract called for an accuracy such that "the inherent error would in no case exceed 50 feet over any one measured mile throughout the entire area." This is probably the limit of precision that can ordinarily be expected. The aerial map maker is dependent for his accuracy upon the ground controls or surveys that the client can furnish. The town of Darien was able to supply a survey of a railroad crossing the town and six or seven accurate but uncorrelated surveys of improved highways. With this much information, the makers were able to furnish a mosaic that, where possible to check, has been found within the contract limits. To define the town boundaries, sheets of muslin 9 by 9 feet square were placed over the monument stones on the ground, and these are readily discernible on the prints. Experiments proved that sheets 3 by 3 feet square could easily be seen on the prints of 600 feet to the inch scale.

Certain drafting work is finally done on the mosaic, such as lettering the streets and waterways, indicating the town boundaries, titling the map, etc. The finished mosaic is then photographed with lights so placed that the joining lines of the individual prints of which it is composed, which are just discernible on the original mosaic, are practically impossible to find in the finished negative. From this negative as many prints of the town map as may be desired are readily made. The finished map, a reduced copy of which is shown in Figure "D," is 35 inches wide and 50 inches high.

Use of the Stereoscope

The stereoscope that is furnished in the contract is identical in principle to those that some years ago graced every parlor along with the family album. In using the stereoscope, overlapping prints are placed side by side and the third dimension of the landscape, the height, is brought out with startling effect. By its amplified use relative elevations may be determined and contour plotting accomplished.

Income from Sale of Prints

Duplicate prints of the contact prints, enlargements, and town maps are obtainable at any time from the makers at stated prices, but only upon authority of the town officials, and the town is deriving some income from the sale of these prints to engineers, realtors and others.

The greatest value of these maps, however, would be in connection with a reassessment survey. Whether a complete reassessment is undertaken or not, it is believed that the assessors, by using the maps, will find enough untaxed property in the town to more than pay for the total cost of the survey in a very few years.

FIG. D—MOSAIC AERIAL PHOTOGRAPHIC MAP OF DARIEN, CONN.

Efficient Road Maintenance

By N. M. Isabella

Maintenance Engineer, Wisconsin Highway Commission

THE maintenance of a highway differs greatly from the construction. In the building of a highway, definite factors are considered, such as alignment, grade, drainage structures, thickness and width of surfacing, and other details that vary with the locality. In maintenance, the remedy or method applicable to one road does not necessarily apply to another. The problem is to keep the road up to its original condition as far as funds will permit. The condition of the road varies with the type and character of the traffic, drainage, topography, and weather conditions, and thus one cannot definitely say what the maintenance cost of a given road will be, because these items cannot always be determined in advance. Efficient road maintenance will therefore depend on the funds available, organization and equipment, proper planning and budgeting of funds to meet traffic demands, and efficient execution of the work as planned.

To carry out maintenance work successfully, sufficient funds must be provided. In most of the states, the funds used for maintenance work are derived from revenues collected from motor vehicle fees. The motor vehicle owner is becoming more critical each year in his requirements for highway service, and takes the opportunity of informing the highway official that he is paying the bill and desires that he be given just returns for the taxes paid by him.

In addition to having sufficient funds to work with, it is essential that the work be handled by a competent organization supplied with up-to-date equipment to do the required work properly.

The future demands of highway traffic must be anticipated from the best available information. Preparations for the year's work should be made well in advance. Probably one of the most undesirable features from the standpoint of the motorist is the closing of the main highway to traffic and requiring him to travel over a detour. If these conditions are not planned for in advance, there is bound to be dissatisfaction from the motorist's viewpoint. The widening of roads for safety, and surface treatments to eliminate the dust nuisance on gravel roads, are important factors to consider.

After having sufficient funds available, adequate organization and equipment, and definite plans to take care of traffic, the last item, and one of the most important, is the efficient execution of the work. This item is important because it involves the thought and energy of the men who actually carry out the work as well as of the official in charge.

In the maintenance of highways in Wisconsin, we have tried to keep these items in mind, and in planning the work the things uppermost in the minds of the highway officials have been to render highway service at minimum cost and to provide for the public safe and comfortable highways. One fact upon which all agree is

A WELL-MAINTAINED GRAVEL ROAD IN SAWYER COUNTY, NORTHERN WISCONSIN

A GRAVEL ROAD THAT HAS SUFFERED FROM SPRING FROST CONDITIONS

that the expenditure of large sums of money for construction is an extravagant use of funds unless supplemented by systematic maintenance. It therefore follows that in the design of a highway the maintenance factors should be considered. The cheapest highway in original construction cost is not always the most efficient and economical highway to maintain, and it is well for those in charge of design to keep these matters before them when planning for future highways.

It often happens that the highway required by traffic conditions in a particular locality cannot be constructed because of lack of funds, but there should be no excuse for planning the wrong highway when all conditions are favorable. In other words, build the maintenance into the construction of the road. Maintenance work, while variable from season to season, can be efficiently executed if properly planned. There are no two roads with similar conditions as to traffic, topography, drainage, etc., and for this reason a special study should be made of the entire road system with the idea of planning for each individual section of the highway. Often the expenditure of a few hundred dollars can save thousands of dollars at some later time, and this can be accomplished only by close observation of all conditions at hand, and by giving due consideration to all the items that will affect the maintenance cost.

In order that a maintenance organization may function efficiently, it must not be tied up in too much departmental red tape. There should be a governing head or body in all successful organizations, but in work which varies as much as the maintenance of a state highway system, the exercising of a certain amount of judgment and discretion must be left with the man actually doing the work and his immediate superiors. The general policies can well be formulated by the governing body, but the matter of details, which vary with every locality and with every highway, must be left to the maintenance man who actually carries out the work.

Maintenance Handled by Counties

The maintenance work in Wisconsin is carried on somewhat differently from the work in most of the other states. While maintenance is under the supervision and direction of the State Highway Department, it is actually carried on by the county forces. To give the public efficient highway service, there must be very close cooperation between the counties and the state. We are glad to say that in Wisconsin this cooperation has been existent from the very beginning and has continued with increasing benefits.

It has been our aim to plan the work for the succeeding year at the end of the maintenance season, at which time a representative of the State Highway Department, accompanied by the County Commissioner and the County Highway Committee, go over all the state trunk highways in the county and determine the improvements to be made under gang maintenance on each highway. The general maintenance work, of course, is routine, and the cost consists primarily of patrolmen's salary, supplies, repairs, and extra help. Gang maintenance work, which may be divided into reconstruction and betterment, requires semi-construction methods and must be planned for in advance. These projects are planned for and a definite amount of money is set up for each project. The county must agree to begin the work on a certain date and have it completed within a certain time. Usually the work is so planned that it will offer the least inconvenience to the traveling public. A good many of the

gang maintenance jobs are completed early in the season before the heavy summer traffic starts, and some of the work is done in the fall of the year after traffic has decreased considerably. We try to keep the work at a minimum during the months of July and August, which are considered the heavy-traffic months.

Cooperation Between Construction and Maintenance Departments

In all highway organizations, there should be not only cooperation between the man who actually does the work and his superiors, but also thorough cooperation between the maintenance and construction departments. If traffic is to be served, it is necessary for those in charge of maintenance to be informed on what the contemplated construction projects are, where they are located, and whether detours will be necessary or not. The great bulk of highway construction is planned well in advance, and by knowing just where the projects will be located for the coming year, detours may be provided and improved by the maintenance forces before the road to be constructed is actually closed. We have followed this policy quite religiously in Wisconsin and can cite many instances where detour roads have been previously widened and surfaced to take care of the through traffic during the construction of the main road.

Division of Maintenance Work

Maintenance work may be divided into four general classes, according to the seasons.

Spring Maintenance.—Probably the most critical time in the maintenance of earth, gravel, and other light-surface roads is in the spring of the year when the frost is leaving the ground. It is true that spring conditions do not show their effect so much on a permanent or durable pavement, but when one considers the fact that the hard-surfaced or paved road comprises only a small percentage of the rural highway mileage, the big problem lies in the proper maintenance of the gravel, shale, stone, and earth roads. At the beginning of the maintenance season, which is usually during the month of April, the ditches must be opened, the culverts cleaned out, the surface graded smooth and repaired wherever necessary. Objectionable features must be removed from the right of way. At this time of the year it is also possible to do the best work in shaping the cross-section of the road. The high places may be cut down and the low places filled. If the patrolman gets a good start in the spring, the maintenance of his section will not be a great task during the summer season, but if the important details are neglected during the spring, he is bound to have trouble during the summer months when traffic is at its maximum. It is sometimes impossible for a single patrolman to do all the work necessary on his section in the spring; in such case he should be given extra help, and in most instances a tractor-grader outfit should be run over his section to open the ditches. The guard-fence, riprap, etc., should be repaired.

Summer Maintenance. After the details of spring maintenance have been taken care of, the patrolman's time is required almost constantly on the surface of the road. From time to time he will find it necessary to replenish the surface materials from the stock piles which have been provided. Where traffic reaches 500

AN EXAMPLE OF WHAT A HIGHWAY MAY LOOK LIKE WHEN DRAINAGE STRUCTURES ARE INADEQUATE

ONE OF SEVERAL TYPES OF MOTOR PATROLS ON WISCONSIN HIGHWAYS

or more vehicles per day on the ordinary dirt or gravel road, the patrolman finds that he must keep his grader constantly on the surface in order to provide a smooth-riding road. If for any reason he leaves the road a day or two, the result is plainly noticeable. One of the important items during the summer months' work is the cutting of weeds along the shoulders, ditches, and right of way. In some cases two cuttings a season are sufficient, but we have found that in many cases it is necessary to cut the weeds and grass four times. The months of July and August require the most intense maintenance on the surface, for during these months traffic is at its maximum. In Wisconsin it is not expected that the patrolman can do much more than keep the surface in a smooth-riding condition during this period. Usually, extra work which is required on his section is taken care of by special crews.

Fall Maintenance.—In the fall of the year when traffic has decreased considerably, the patrolmen will find more time to take care of work other than the surface. At this time the ditches should be opened again and all culverts cleaned out and the weeds and brush cut from the right of way to prevent snow from drifting on the highway during the winter. Stock piles of materials should be provided at those places where the road is apt to give trouble in the spring. The road surface should be kept smooth so that when heavy frost comes, it will freeze in a uniformly smooth condition. It is essential that the patrolman continue his grading operations until the ground becomes frozen.

Winter Maintenance.—In most states of the latitude of Wisconsin, the amount of winter maintenance done is comparatively small on account of snow conditions. Quite a number of states have adopted systematic snow-removal programs and are attempting to give through highway service during the winter months. We believe the time is not far distant when formulated programs for winter maintenance and snow removal will be put into practice in all states in the snow belt. The demand for through highway service during the winter months is rapidly growing. This is plainly shown in Wisconsin by comparing the snow-removal activities of last winter with those of this winter. During the season of 1925-1926 there were approximately 1,500 miles on the snow-removal program. About $100,000 was expended. Sixty miles of snow-fence was placed. This fall $250,000 was appropriated for snow-removal work, 275 miles of snow-fence was placed, and an increased supply of equipment was purchased. The counties are also attempting to keep all the main highways open to traffic. In the northern part of Wisconsin considerable logging is done during the winter and it is necessary to leave five or six inches of snow for sleighing. This makes snow removal in the northern counties a little more difficult, but these counties are giving good service to both the sleigh and the automobile traffic.

Highway Safety

Automobile accidents on the highways are responsible for upwards of 20,000 fatalties annually in the United States. Several items contribute to this alarming death-rate, most of

them showing that the driver is responsible. There are a number of cases, however, where the condition of the highway has caused very serious accidents. It is the duty of every highway worker to do everything possible to eliminate the causes for these accidents as far as his work is concerned. The proper signing of a highway system does much toward informing the public of the dangerous and hazardous places. The marking of a center line on paved roads also tends to reduce accidents. Much remains to be done in the separation of grades with railroads and also on high-speed highway intersections. The dust problem on gravel and dirt roads is a very serious one. The states are beginning to deal with this, but when one considers that 80 per cent of the total rural highway mileage is unsurfaced, it can be readily seen that considerable thought and energy must be directed toward the solution of this problem.

Supervision and Coordination of the Work

No activity can be carried to a successful conclusion unless it is properly supervised and the forces involved properly coordinated. We find that it is impossible to get the best of service from highway patrolmen unless they are properly supervised by a superintendent or foreman. They try to do their best, but when any man is put out on the highway ten hours each day with the small amount of supervision that he ordinarily gets, it is next to impossible to expect efficient results. By having one who can talk with the patrolman and exchange ideas from time to time, better maintenance will be secured at no increased cost.

Service to All

The foregoing remarks have been applied primarily to state highway systems, but we are frank to say that no state highway system can be successful unless the secondary or local highways experience a growth commensurate with their importance as arteries of transportation. In other words, to give the best of service to all of the motoring public from the most remote farmer to the city dweller, it is essential that improvements be made on the local and county roads as well as on the state highways.

Probably one thing that speaks more for the system employed than does any other is the fact that county trunk systems patterned after the state system have been developed in all counties, and in a great many instances the influence has extended down to the town roads. The county trunk systems today total approximately 12,300 miles of secondary highways, which are systematically maintained and marked and signed in the same manner as the state highways. Many of the towns have developed town systems and have placed patrolmen on the highways to keep them maintained at all times. It is believed that the results obtained on the state highway system through the plan adopted have been largely responsible for the development of the county trunk systems and the improvement of town roads.

It has not been the author's intention to make this article cover the many details of maintenance work that necessarily vary with each state and locality. On the contrary, the purpose has been to point out a few of the important factors which, when properly applied, will make for better transportation service. It is true that to carry these out requires the expenditure of money, time, and energy, but compared with the total investment in highways and in motor vehicles, the amounts expended for maintenance are almost insignificant. If we assume that each of the motor vehicles owned and operated in a state travels 5,000 miles per year, and the cost of operation is reduced one cent a mile because of efficient maintenance of the highways, that would amount to a saving of $50 a year for each owner of a car. In Wisconsin the total amount thus saved would be about $35,000,000 a year.

I like to think of maintenance not as an expenditure but as a saving to the motoring public. We must not lose sight of these facts, because upon the highway official will rest the responsibility of rendering efficient traffic service. Each has his part to play, from the patrolman up to the state highway engineer, and when thorough cooperation exists among all, then can it truly be said that *the traffic is served.*

Daylight Saving Effectively Defended

AN ineffective effort was made in the New York Legislature by hostile interests to shorten the period of daylight saving. The Merchants' Association of New York, which was largely responsible for the existing local option law regarding daylight saving, vigorously opposed any change. Clement M. Biddle, Chairman of the Association's Special Committee on Simplification of the Calendar, and John R. Young, Manager of the Convention Bureau of the Association, represented it at a hearing given in Albany on the two bills which were designed to shorten daylight saving. Both failed of passage in the Legislature, recently adjourned. One of these would have confined the daylight saving period to the interval between May 15 and September 15, and the other to the interval between May 30 and the first Monday in September. The present daylight saving period for New York City extends from the last Sunday in April to the last Sunday in September.

A WELL-PLANTED CITY STREET

The Organization of City Shade Tree Work

By P. L. Buttrick and G. A. Cromie

Secretary, Connecticut Forestry Association, and Superintendent of Trees, New Haven, Conn., respectively

UNTIL recent years most street trees in American cities and towns were planted by property owners along their own frontage on the public street. Public authority, if any, over the trees usually rested with the commissioner or officer in charge of the streets. Public action consisted largely in removing dead or defective trees. As cities become larger and problems of growing and caring for trees ever more complicated, it is evident that the system of private planting and lax public control will not keep our streets properly tree-clad. To do so, two things are necessary: (1) legal authority for the city to plant and care for trees and to prevent individuals, either property owners or others, from planting, removing or treating any trees, except under regulation; and (2) a proper organization to carry on the cities' tree work.

Shade Tree Codes

Most cities now take some public care of their street trees, but few have well-organized and adequately supported tree services. There are, however, a large number of satisfactory legal codes, both state laws and municipal ordinances, regarding shade trees.

Numerous court decisions have upheld the underlying principles of this type of legislation. A city or town wishing to control its street trees can therefore easily do so by passing proper acts, which should include the following points:

(1) Street tree planting, trimming and removal to be done only by the city or under permits issued by it.
(2) Penalizing cutting or otherwise injuring or, by neglect, allowing injury to a street tree.
(3) Penalizing leaving a horse standing where it can injure street trees.
(4) Requiring a permit for attaching wires, signs, or fixtures to a tree.
(5) Penalizing the removal of guards or stakes from city trees.
(6) Regulating the open space to be left about a tree in laying sidewalks.
(7) Providing for insect control on adjoining private property in emergencies.
(8) Providing an adequate machinery for enforcing the above provisions.

After a study of existing legislation, a model

ordinance concerning these points was drafted by the New York State Bureau of Municipal Information, City Hall, Albany, N. Y., and is being tried out in New Rochelle.

Organization of Shade Tree Work

There are several different ways in which city shade tree work is organized. These may be listed as follows:

(1) *Under the city park commission,* there being usually a separate department under it to handle the street tree work. This is done in the 28 American cities reporting as described below.

(2) *Under a city department or sub-department,* under or in connection with the department of public works or streets or the city engineer's office, as in Washington, D. C., in New Haven, and in Hartford, Conn. Six American cities are reported to have this form of organization.

(3) *A special shade tree commission* organized in a manner analogous to city park commissions, used largely in New Jersey, notably in Newark. Under New Jersey state laws, the creation of local shade tree commissions is especially provided for. Outside of New Jersey, few cities have this form.

(4) *Under a commission of technical experts.* —This system differs from the above, where the commissioners are merely interested citizens, in that the members are experts, being men distinguished in the several fields bearing upon municipal tree work, such as city planning, landscape architecture, forestry, plant physiology, soil chemistry and the like. The members of such a commission may be public officials or private experts. This system has been used successfully in Paris, which has developed a world-famous shade tree system.

(5) *Under specially appointed officers,* responsible directly to the chief officer of the city or town, but not connected with any department or officials. The Connecticut state law specifies that the selectmen of each town shall appoint an officer known as a tree warden, who derives his primary powers from state shade tree laws. Under Massachusetts laws the office is elective. Added authority may, however, be granted to him by local ordinances in either state.

Each of these systems has its advantages and disadvantages. That of a special city department or sub-department usually ties the work in with city bureaus concerned with streets, and work with which it is closely connected. On the other hand, it cuts it off from the park system, which usually has landscape departments, tree nurseries, trained employees, equipment for spraying and the like, and therefore duplicates to some extent municipal machinery. It also sometimes permits politics to get into the tree work.

The system of locating the work under a park commission, which is usually non-political in its make-up, has many advantages, but sometimes cuts off contact with practical considerations of street work.

The creation of a special shade tree commission should entirely remove political complications and insure a body fully devoted to shade tree work, but such a commission to some extent duplicates the work and organization of the park commission and does not coordinate with other municipal departments concerned.

The idea of a technical commission has apparently never been tried in America, but for very large cities where the problems of growing or caring for trees are very involved, it might well have advantages.

The special employee appointed by the head of the local government after each election has, in Connecticut at least, too often resulted in political appointments and does not afford any organized backing for the head of the work. Popular election of the warden is almost as bad. Originally designed for small communities, it has usually been abandoned by larger ones embarking upon organized shade tree work.

It is the writers' personal opinion that, for the average-sized city, the location of the work under a non-political commission, which is also charged with the care of city parks, is the most acceptable form.

An Expert Immediately in Charge Necessary

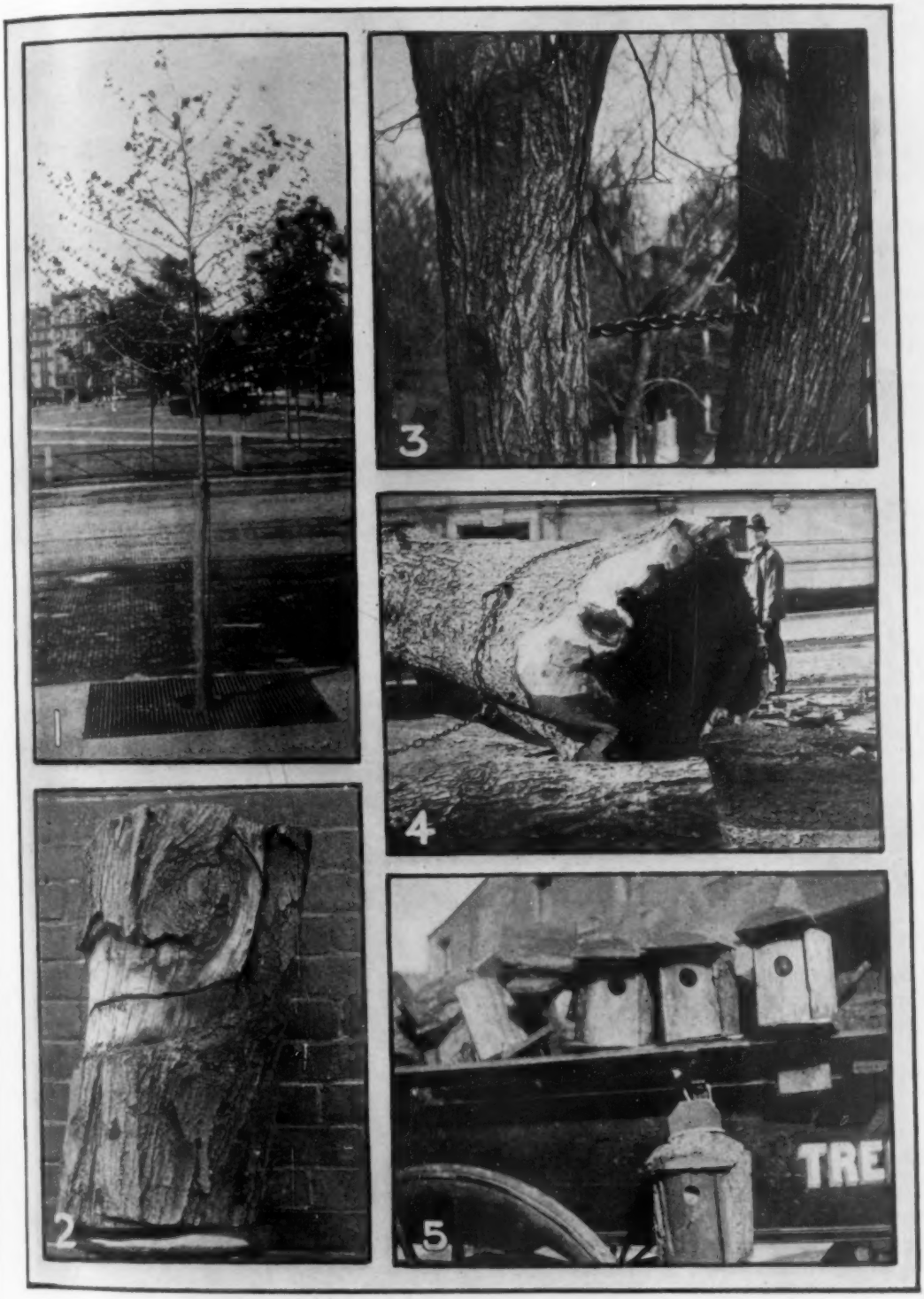
Whatever form is adopted, the immediate charge of work should be intrusted to a single responsible head who should have some technical training for his work. In small communities he must at least be a "practical" tree man or landscape gardener. In larger ones, in order to cope with the many problems involved, he should be a full-trained technician, either a forester or a landscape engineer, possessing special knowledge of shade tree work and a grasp of city planning and municipal engineering problems.

Every city which has seriously taken up the care of its shade trees has appointed such a man, giving him a title such as city forester, superintendent of trees, tree warden, arboriculturist, or the like. It is hardly worth while to discuss the theoretical advantages of any of these titles, although much ink has been spilled over the question.

Under this man the work should be subdivided as needed, and technical assistants provided if the work demands it. To deal with special design or other problems, outside expert assistance can be brought in in an advisory capacity, as is done in special park, sewerage, or other municipal problems.

Financing Street Tree Work

The overhead cost of office expense, salaries, and ordinary maintenance work should be pro-



SOME POINTS IN CITY FORESTRY

1. Trees to grow upon paved streets and sidewalks must be provided with grills to allow moisture to reach their roots. This is one form of grating used
2. Work of the maple borer—a destructive insect on city shade trees
3. Bracing like this saves many shade trees, but may be carried to excess
4. Hollow trees must be removed for reasons of public safety. Often the cost of so doing much exceeds that of planting new trees
5. Bird box distribution—a usual activity of the city forester—often with volunteer aid of school children

vided for in the annual city budget; as also, in the writers' opinion, should be all routine costs of planting, care, and removal of street trees. Making special assessments, records and collections for small items causes extra expense and delay, and creates unreasonable opposition to tree work. But at first it may not be possible to secure enough funds in the budget to do necessary work, and the cost of planting new trees and removing trees in the way of garages, etc., can be assessed against the abutting property owner. The removal of existing trees for street widening and the like should in most cases be charged to such improvements, rather than to the ordinary tree budget.

Many factors influence the amount of money necessary for successful street tree work: the number, age, size, and condition of existing trees; local soils and rainfalls; the kind of pavements and sidewalks; width and location of the tree belt; overhead wires; method of paying costs; and, lastly, the percentage of street mileage on which trees will grow successfully—for it is always better, as is the custom in European cities, to keep healthy trees on fewer streets than to plant widely and cheaply without provision for upkeep.

In Washington, New Haven, Springfield, and several other cities containing trees of all ages, under expert care for ten or more years and where all costs of planting, care and removal are paid by the city, the annual appropriation is about $1 per street tree per year, or 20 to 35 cents per capita of human population, al-

ORGANIZATION OF STREET TREE WORK—DATA FROM 28 CITIES, JANUARY, 1927

City	Population 1926 Estimate	Number of Street Trees	Street Trees Cared for by	THE CITY PLANTS: Request of Property Owner	Systematically	Charges Owner	Planted in 1926	Appropriations, 1926
Akron	*225,000	No record	Div. of Parks Hez. Russell, Supt.	While paving streets			1,400	Variable: street paving bonds
Atlanta	*250,000	.....	Park Dept. J. L. Veal, Forester	Owners give trees; city plants				Variable: payroll account
Baltimore	808,000	200,000	Dept. Pub. Parks and Squares H. J. Howe, Forester	....	Yes	No	385	Street forestry, $20,000; park forestry, $25,000
Birmingham	211,000	No record	Park and Rec. Bd. R. S. Marshall, Gen. Supt.	....	....	....	None	$3,000
Boston	787,000	24,000	Park Dept. Wm. P. Lang, Chairman	....	Usually	No	300	$5,000
Bridgeport	*152,500	No record	Tree Warden Henry Cliffe, Supt.	....	....	....	12	$14,000
Buffalo	544,000	350,000	Bur. of Forestry M. H. Clark, Forester	Yes	Yes	No	7,000	$125,000
Cleveland	960,000	100,000	Div. of Forestry R. F. Prische, Forester	Yes	....	No	1,000–10,000	Forestry and landscape, $80,000; street trees, $100,000
Columbus	285,000	150,000	Div. Forestry and Landscape Jas. Underwood, Chief Tree Warden	....	....	....	300	$8,500
Denver	285,000	.....	Forester's Office G. A. Klaiber	Parkways only				Salaries and supplies only
Detroit	1,290,000	250,000	Forestry and Landscape Div. C. E. Smith, Supt.	Yes	Yes	Yes	5,443	Various items, about $250,000
Grand Rapids	156,000	42,000	Forestry Dept. E. C. Eckert, Forester	Yes	....	Yes	446	$14,066
Hartford	164,000	12,000	Bd. Street Commissioners W. A. Muirhead, Forester	Yes	Yes	....	400	$16,750
Lansing	73,200	70,000	Park Commissioners Carl Fenner, Asst. Forester	Yes	....	Yes	229	$8,000
Milwaukee	517,000	86,000	City Forester O. W. Spidel	....	Yes	Yes	3,000	Overhead only $30,000
Minneapolis	434,000	700,000	Horticulturist Louis Boeglin	....	Yes	Yes	520	0.05 mill tax levy; $15
New Haven	182,000	26,000	Supt. of Trees G. A. Cromie	Yes	Yes	No	768	$31,000
New Orleans	419,000	No record	Parking Commission George Thomas, Supt.	Yes	Yes	No	3,620	Variable; taken from general parks appropriation as needed
Newark	459,000	65,000	Shade Tree Commission Carl Barnwart, Supt.	Yes	Yes	Yes	1,500	$95,573
New York Manhattan Bor.	1,877,000	.....	Forestry Bur. Wesley B. Leach	Only in parks and parkways				$17,047
Paterson	143,000	25,000	Park Commission Robt. M. Crowe, Supt.	Only in parks			325	No special funds
Pittsburgh	637,000	No record	Bur. of Parks Jas. L. Grimes, Forester	Yes	Yes	No	.....	$9,825
Rochester	321,000	No record	Park Dept. P. Maloy, City Forester	Yes	Yes	Yes	1,875	$35,000
Salem	42,900	4,500	City Forester O. G. Pratt	Yes	Yes	No	125	$17,500
Scranton	143,000	32,000	Shade Tree Commission Herman Kerler, Forester	Yes	....	No	217	Variable
Springfield	145,000	63,000	Forester L. F. Prouty	Yes	Yes	No	2,000	$55,000
Syracuse	184,000	50,000	Park Dept. Geo. Gettling	Yes	Yes	No	900	$12,901
Washington	528,000	105,000	Trees & Parking Div. C. Lanham, Supt.	No	Yes	No	1,800	$96,320

*Population estimated by local officials.

EDITORIAL NOTE.—The street tree work is connected with the Park Department in all the cities except as follows: Akron, Highway Engineers; Columbus, a separate division; Grand Rapids, under Director of Public Welfare; Hartford, Public Works Department; Newark, special commission; New Haven, Public Works Department; Scranton, separate commission; Washington, Engineer Commissioner. Care and removal are usually paid for by the city.

though neither the latter method nor an inflexible proportion of the budget is as fair a basis for all cities as with pavements and other city expenditures.

How Much Should a City Spend on Its Street Trees?

How much should a city appropriate for its trees, assuming it paid for all the work done directly from the treasury? Is it possible to arrive at a satisfactory budget in terms either of so many dollars per inhabitant, so many dollars per mile of street, so much per tree, or by some other method of figuring?

It might be possible to arrive at an average figure for any of these things if enough data were available, but unless some rough classification was made of cities according to population, area, or physical features, it is doubtful whether an average figure would be of much value. It might be possible, however, to divide cities into population groups and obtain a minimum figure of some value as a rough guide to cities about to embark on organized shade tree work, but it is not felt that enough data are available to attempt so doing. An expert on a short visit to any specific city could consider the above factors on the ground and estimate closely the needed budget.

Statistical Data

A questionnaire sent out by the authors with the help of the State Bureau of Municipal Information, Albany, brought replies from the departments controlling street trees in 28 cities, varying in population from below 50,000 to nearly a million. In these cities street trees were cared for, usually by a trained expert with specific funds, under or connected with the Park Department in 20 cities; under the Public Works Department in 2 cities; under the City Engineer in 2 cities; under the Director of Public Welfare in 1 city; and under a separate Shade Tree Division in 3 cities.

The number of existing trees varied from 12,000 (Hartford) to 350,000 (Buffalo); the number planted in one year from 150 to 10,000 ("exceptional," Cleveland); and the number annually removed from 150 to 4,000. The figures indicated that a city with many trees of all ages and not extending its area rapidly (most large cities now extend their residential streets to nearby towns) planted and removed 2 per cent of its trees yearly, giving the average street tree a life of 50 years.

The department planted trees in suitable locations where requested by the adjoining property owners in 16 cities, and also systematically over a section of the city annually in 14 cities. Six cities did little and seven no planting in 1926. Responsibility for more or less maintenance and removal was accepted by 23 cities. Most cities paid the cost of work out of the annual city budget (varying from $3,000 to $210,000) but eight cities assessed costs of tree planting and seven charged costs of removal to the adjoining property owner.

The table on page 652 gives information concerning shade tree organizations in twenty-eight cities mentioned.

Incorporation of Metropolitan Districts Authorized by Constitutional Amendment in Michigan

THE need for regional planning by metropolitan districts has long been recognized in Michigan. The right of the Legislature to provide for the incorporation of such districts has now been written into the constitution of the state by vote of the people at the April 4 election. The amendment then adopted reads as follows:

Section 31. The Legislature shall by general law provide for the incorporation by any two or more cities, villages or townships, or any combination or parts of same, of metropolitan districts comprising territory within their limits, for the purpose of acquiring, owning and operating parks or public utilities for supplying sewage disposal, drainage, water, light, power or transportation, or any combination thereof, either within or without the limits of such district as may be prescribed by law, and any such district may sell or purchase sewage disposal or drainage rights, water, light, power or transportation facilities. Any such district shall have power to acquire and succeed to any or all of the rights, obligations and property of such cities, villages and townships respecting or connected with such functions or public utilities; provided, that no city, village or township shall surrender any such rights, obligations or property without the approval thereof by a majority vote of the electors thereof or of the territory of such city, village or township, comprised within such district voting on such question. Such general law shall limit the rate of taxation of such districts for their municipal purposes and restrict their powers of borrowing money and contracting debts. Under such general law, the electors of each district shall have power and authority to frame, adopt and amend its charter upon the approval thereof by a majority vote of the electors of each city, village and township or portion thereof within such district, voting on such question, and through its regularly constituted authority, to pass all laws and ordinances relating to its municipal concerns, subject to the constitution and general laws of this state.

The adoption of this important constitutional amendment may be credited to the fact that the Detroit Board of Commerce, Detroit Citizens' League, Detroit Bureau of Governmental Research and other local bodies, in cooperation with other Michigan towns and cities, have worked for three years to secure permission for establishing local metropolitan districts. The chief purpose is to permit cooperation in plans, both engineering and financing, among two or more communities seeking to develop systems of public service for water, sewers, sewage disposal, etc. When effective, this plan will save millions of dollars to taxpayers and will greatly increase the efficiency of any such system.

WILLIAM P. LOVETT.

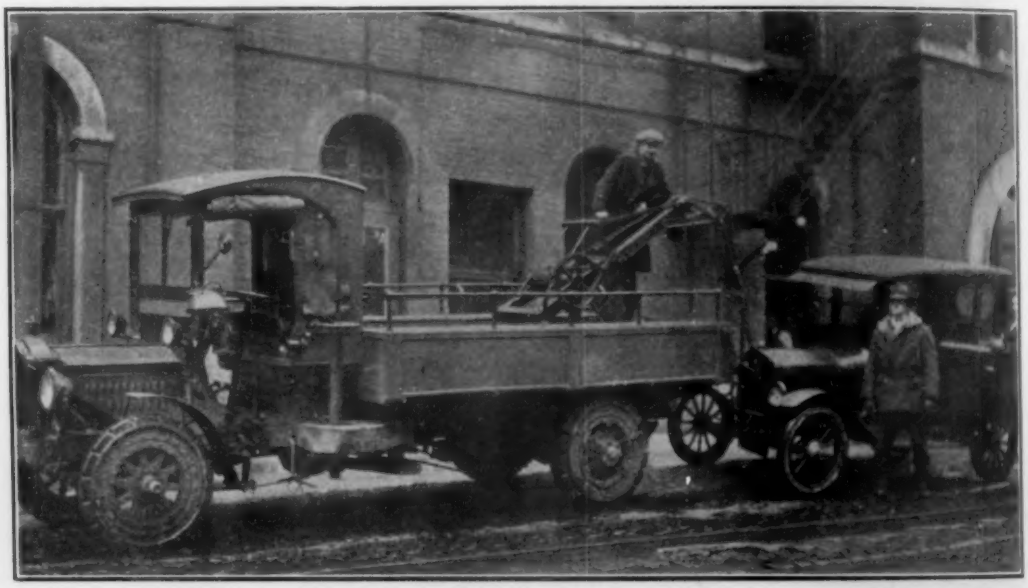
Essential Features of an Efficient Street-Cleaning System

By Harold W. Baker

Commissioner of Public Works, Rochester, N. Y.

IT is the desire of every city to present an attractive appearance, both to its residents and the visitor within its gates, whose opinion and mental picture are largely influenced by municipal housekeeping. Two of the most important factors in creating a lasting, pleasing mental picture for the visitor and maintaining the good-will of the citizens are the maintenance of streets and pavements in good repair and keeping them as clean as possible.

In 1926 Rochester spent $251,810 for street cleaning, or 77½ cents per capita, and for snow removal in the business section and residential street plowing, $65,400, or 21 cents per capita.



TOW-CAR WHICH MOVES PARKED CARS OUT OF THE WAY OF ICE-CLEANING GANG, ROCHESTER, N. Y.

Street-Cleaning Organization

The organization used in Rochester is as follows:

All street cleaning is under the supervision of a Deputy Commissioner of Public Works and under him a Superintendent of Street Cleaning. The city is divided into ten districts, the sizes of which are governed by the density of population and intensity of traffic. A district foreman is directly responsible for all cleaning within the district and has under him two or more squad foremen who are in charge of sections and who supervise the work of gangs and white wings who clean one or more streets where traffic is heavy.

In sections where it is necessary, hand hose flushing is done by gangs who are responsible to the district foreman. Most of our flushing is now done at night because of the increasing intensity of motor traffic, and in this work we pay no attention to district lines. One inspector has charge of all night flushing, supervising the work of seven motor flushers and two or more hand hose gangs.

Hand Cleaning

Street cleaning is a seasonal function and is seriously affected by rainfall. In Rochester, on account of severe climate from November to May, actual street cleaning is a spasmodic activity. With the disappearance of snow, we are faced with the necessity of removing the winter's accumulation of dirt and filth. During this period and in the autumn when the leaves have fallen, we are taxed to the utmost to keep the streets clean and at the same time make regular collections of ashes and rubbish. In this connection, I may say that we maintain the regular collection and do not let other work interfere in the slightest degree. During the

spring cleaning we pan or scrape the dirt into piles, which are removed by wagons. After the spring cleaning we either remove dirt in piles or move it by wagons, or the white wings collect the dirt by carts and it is put in a convenient place for removal by teams. Mechanical and hand flushing are resorted to during the winter whenever weather conditions permit.

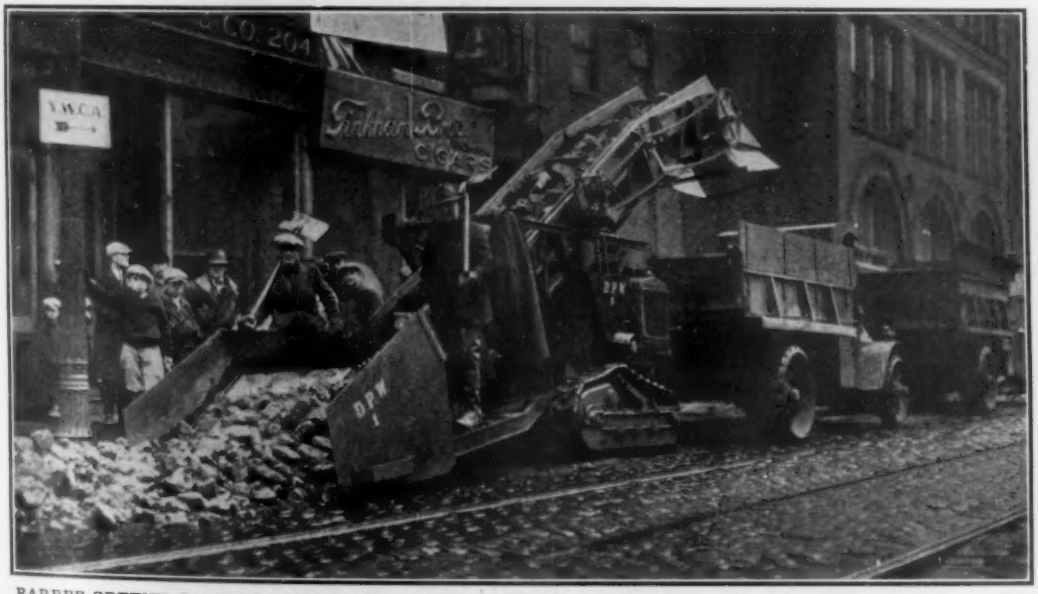
INGERSOLL-RAND JACKHAMERS AND COMPRESSORS USED IN CUTTING HARD SNOW AND ICE IN GUTTERS

Flushing

We are depending more and more on mechanical flushing to replace hand work as fast as new equipment can be obtained. We have found that we can flush brick streets, because of improved nozzle arrangements and pressure in the new mechanical flushers. We have also found that frequent hand flushing of worn streets and Medina block pavement has been the most satisfactory method of cleaning and it does not damage the pavement.

Mechanical and hand flushing is done at night and on schedule. Every flusher covers a certain route three nights per week, and the business streets are cleaned on schedule six, three, or two times per week by hand flushing, depending upon the intensity of traffic. Flushers and gangs on night work start at 10:30 and continue until morning. We have found that unless the flusher is in good working condition, throwing a solid stream of water under good pressure into each gutter, flushing is useless, and in fact a waste of time and money. Our men have been instructed to cover their routes, but they are held responsible for thoroughness of work rather than area covered. We try to encourage pride in careful work on the part of flusher operators and impress on them the fact that they are cleaning streets and not just wetting down the pavement. The operators never know just when the Commission or the inspector will follow their machines and inspect their work—perhaps when they least expect it.

We have recently purchased five new flush-



BARBER-GREENE LOADER HANDLING BROKEN ICE ON BUSINESS STREET IN ROCHESTER

GMC FLUSHER EQUIPPED WITH SARGENT HEAVY-DUTY WOOD SNOW-PLOW USED IN ROCHESTER

ers, one straight flusher of the single-unit-type and four tractor-trailer flushers of 2,000 gallons capacity and also of the single-unit-type; that is, the centrifugal pump is driven by a power take-off of the transmission of the tractor. All flushers bought by us in future, I believe, will be of this type, as we can use the tractor to good advantage for snow-plowing and hauling purposes during the winter months.

Budget

We are allowed a certain sum in our budget for street-cleaning purposes. The expenditure of this sum is subject to careful regulation. We have definite budget allowances for salaries, labor, teams, trucks, supplies, equipment, and repairs. The Commissioner receives a payroll analysis each week of the expenditure for labor and teams during the preceding week, and he allots a certain sum, say $4,000, for labor and teams each week. This sum is varied, depending on the weather and physical conditions.

Each district is allotted a certain sum each week for cleaning, and the district foreman is expected to keep his district clean with the sum allowed. In case we find the district foreman employing too many men or incompetent labor, he is called upon to account for his waste. If we find that the district foreman cannot keep his district clean on the sum allowed, we increase the allowance. We do expect the district foreman to keep his district clean, and we tolerate no excuses.

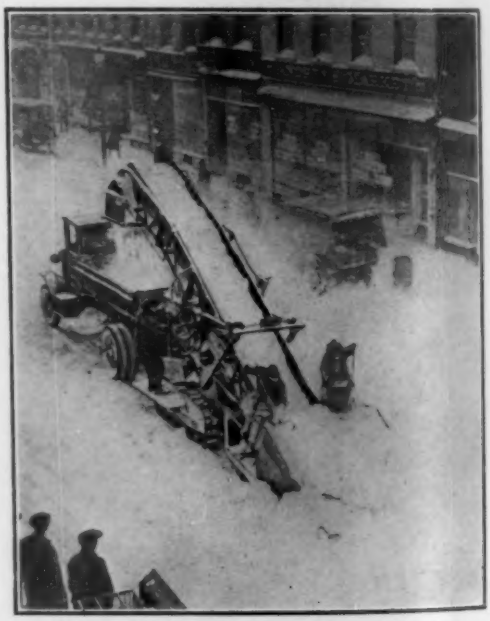
Snow Removal

Automotive transportation has reached the stage where we are dependent upon the automobile and truck in winter as well as in summer. We have recognized this need and have laid out a definite program for snow fighting.

We have purchased during the last two years snow-plows for all purposes—a 5-ton tractor with plow, a 2-ton tractor with plow, a Fordson tractor with plow, two snow loaders, etc. We have now 40 trucks equipped with plows ready to start plowing at short notice on routes laid out for them. Streets have been classified as Class A, B, or C; that is, the main traffic arteries are Class A, cross-streets are Class B, and others are Class C. In case a storm of great intensity comes, we concentrate attention on Class A and B streets, and in an emergency we abandon Class C and try to keep the main arteries open.

Every morning at eleven o'clock, we receive an advance report direct from the Meteorologist at the U. S. Weather Bureau, giving the location of possible storms, when they are expected, their intensity, etc. A barometer hangs in my office and I have one in my home, and they are looked upon as more than decorative instruments. We keep emergency men on duty during the night at the water-works garage during the entire year, who inform us by telephone when a storm starts. Plows and men are called out by telephone, and every man has his assigned place and his part to perform. We realize that there may be a slip in the best-laid plans, but we have tried to eliminate as many uncertainties as possible.

The purchase of mechanical snow loaders has enabled us to more than double the amount



BARBER-GREENE SNOW LOADER HANDLING HEAVY SNOWFALL

of snow removal from the streets in the business section, yet with additional mechanical equipment we have employed more men than heretofore on account of extending the snow-removal area.

So much depends upon physical arrangements of streets, their grade and type of pavement and traffic conditions, and on various standards of cleanliness, that no one can make a single organization for cleaning or a method of cleaning invaluable for use in every community. My suggestion to other cities is to provide an adequate appropriation, use up-to-date equipment and higher supervision, without the crippling influences of political direction. Do these three things, and the people of your community will enjoy clean streets at a minimum of cost.

ACKNOWLEDGMENT.—From a paper read at the Seventeenth Annual Meeting of the Conference of Mayors and Other Municipal Officials of the State of New York.

Street Lighting in Miniature

THE SMALLEST WHITE WAY IN THE WORLD

At a glance this looks for all the world like a busy white way in a bustling metropolis, and that is just the way it is supposed to look. As a matter of fact, it is a miniature street in the Nela School of Lighting at Nela Park, Cleveland, Ohio. The buildings, lights, people—everything is one-sixteenth actual size. At a throw of the switch the street-lighting units shown in the picture sink through the sidewalk and others rise to take their place. Thus, five complete and different systems of modern street lighting may be shown on this one street, and shown as they would actually appear when installed on the full-size white ways of America

Forcing the Political Boss Into the Open

By William A. Boyce, Jr.
City Clerk, Indianapolis, Ind.

ON Monday, January 19, of the current year there appeared among other bills introduced in the lower House of the Indiana General Assembly, in session in the Capitol at Indianapolis, House Bill Number 70. This bill, introduced by ten of the twelve representatives from Marion County, in which Indianapolis is located, proposed to increase the number of city councilmen in Indianapolis from nine to fifteen and to have them elected from individual wards instead of at large. The introduction of this bill was not unexpected, as I had heard it whispered about in certain quarters of the City Hall some ten days previously. I was therefore able to brand it immediately as the work of the political boss of our city and county in an effort to strengthen his control of the political situation, especially among the thousands of negro voters, who had recently become aroused over the passage of a segregation ordinance by the Indianapolis City Council.

House Bill No. 70 if enacted into law would, in addition to increasing the size of the city council from nine to fifteen, also require that each of the fifteen be elected from his respective ward. Naturally, in those wards which are predominantly inhabited by members of the colored race, the political boss would dictate the selection of councilmen regardless of the wishes of the better class of colored citizens in the ward. Under our present system each political party nominates six candidates for the city council from as many councilmanic districts and they are voted for all over the city, with the provision that the nine candidates receiving the highest number of votes are declared elected. This means in effect that the minority party always is assured of at least three councilmen, with a possibility of electing four. Thus the majority in the council never becomes unwieldy and there is a constant minority check on the majority.

It can also be readily understood that by electing councilmen from individual wards, as was proposed by the bill, those wards in the city that are under the domination of the political boss of the party in power would invariably select the boss's political henchmen to seats in the city council. This condition of affairs would bring about a system of political horse-trading among the ward-councilmen from each of the fifteen wards that without a doubt would work serious injury to the best interests of the city of Indianapolis.

As was before stated, House Bill No. 70 was introduced on a Monday. It was immediately referred to the Committee on Affairs of the City of Indianapolis by the Speaker of the House of Representatives. Fortunately, the chairman of this committee, one of the two women representatives in the Legislature, was a friend of the writer's and not aligned with the forces of the political boss of our county. Upon the insistence of the committee chairman, a public hearing was ordered to be held the following Thursday to consider this bill. Upon the morning prior to the day set for the public hearing the writer of this article had prepared and laid upon the desks of each member of the lower House a signed statement setting out in no uncertain language the objectionable features of the proposed bill and particularly calling attention to the abolishment of the present provision for assured minority party representation in the City Council. The public hearing on the bill was quite a one-sided affair, with five or six citizens speaking in opposition to the bill, to one who spoke in its favor. No arguments were advanced for the passage of the bill by its ten authors other than that it would be to the interest of the party organization and be a step in the direction of "home rule" by city wards. However, in order to get the bill printed and laid upon the members' desks, the committee decided to recommend the bill to the House for advancement to second reading. The committee report was made the following day and the bill advanced on second reading without debate.

In the meantime public opinion was making itself felt. On January 20 the *Indianapolis News* carried the following editorial comment:

"With fifteen councilmen, each chosen from a councilmanic ward, there would be the possibility of greater dissension. Furthermore, nine councilmen now cost the public $5,400 per year; fifteen councilmen would cost $9,000. Doing away with minority representation removes a check that has proved to be valuable in the past. Electing councilmen-at-large ought to assure representation of the entire city's interests. Choosing them by wards means the beginning of a trading system of voting."

After the public hearing had been held, this same newspaper said editorially:

"The public hearing demonstrated that nobody is in favor of House Bill No. 70 except a few politicians. It contains the running-gear to which

may be attached the body of a political machine. The present system is valuable in many ways. It is opposed to factionalism and partisanism and has served the city well."

The *Indianapolis Times* on January 24 carried the following among its editorials:

"Increase of numbers would permit the system of bossism to flourish more easily. The real reason back of the bill is that the boss is finding it difficult to keep his henchmen in line when the people become aroused and he wants more members in order that he can always get through the measures that he and his machine desire."

The *Indianapolis Star*, which had long been the champion of the political boss of the city, nevertheless stepped into line with public opinion and opposed the bill, saying:

"The change from the more cumbersome council in 1909 to the present size was deemed a pronounced forward step in securing greater efficiency. The reason which prompted the original change to a smaller body still exists. Members of the Legislature may not concern themselves greatly over what affects Indianapolis alone, but they should have no difficulty in ascertaining the general sentiment against the attempt to increase the council's size and method of election."

The writer had also taken the precaution to dig into the musty files of the local newspapers to ascertain the expression of public opinion in 1909, when the old ward system of electing councilmen was discarded for the present system. On the morning of January 26 he laid upon the desk of each member of the lower House of the Legislature a signed statement setting out the editorial comment and disapproval of the bill, together with the remarks made in speeches by the authors of the bill creating the present system when that bill was under consideration by the Legislature in 1909. The logical argument in that signed statement was incontrovertible and had much to do in causing the final defeat of House Bill No. 70.

The Speaker of the House of Representatives handed down the bill for third reading and final passage on the morning of February 1, and the debate was opened immediately by one of the bill's ten authors. He advanced no sound argument for its passage other than it was "desired" by the county chairman; but he did proceed in an attempt to pick to pieces the argument against the bill contained in the two signed statements made by the writer. Other speakers for the bill pointed out that the bill affected only the city of Indianapolis and as it had the support of ten of the twelve representatives from that city it should receive the customary support of the out-state representatives. The main opposition speech was made by a newspaper editor from Bluffton, Ind., who was a member of the lower House. He termed the bill a desperate effort of the Marion County political boss to rejuvenate a decrepit political machine with two flat tires and a slow leak, lacking in merit and sponsored by no one except the political henchmen of the boss.

On a roll-call vote the bill was decisively defeated, by 28 ayes to 66 noes. The Democrats cast a solid bloc of 34 votes against it and were joined by 32 Republicans. Of its ten authors, only nine supported their bill, and it will be seen that they were able to muster only 19 additional Republican votes in their behalf. The writer happens to know beyond a doubt that most of those 19 votes were secured on trading propositions and not because the bill possessed merit.

Thus died one of the most vicious and certainly one of the most unpopular measures to be introduced in the 1927 session of the Indiana Legislature.

The Boss Loses

Something more than the mere defeat of one legislative bill was involved in the vote which killed a measure which would have sent Indianapolis back to the old ward system of councilmen with fifteen members.

It was the defeat of the boss of this county. It was his bill and his scheme. It was his plan to perpetuate bossism and himself.

It means something when the members of the Legislature from out in the state begin to understand the conditions of this city and refuse to trade with that presumably solid block of twelve votes from this county, not solid at all in fact.

It means something when these out-state lawmakers shy away from bossism in the state capital, not because the boss is not a fine, affable gentleman who always keeps his word and tries to deliver for their own projects, but because they know that people at home will begin to ask questions.

A boss, to be a boss long, must always win. He cannot afford to lose, for when he loses, his supporters, held together by a very definite bond of selfish gain, begin to desert and go elsewhere.

This particular measure was bossism at its worst. It was a step backward and indefensible. It would have abolished the small gain that comes through minority representation in the council which is an advantage.

Machine government depends largely upon the ability to hide the shells of the sucked eggs.

Bossism depends always in providing an alibi for the agents it uses. It needs a camouflage of doubtful responsibility.

That was exactly what this bill sought and what the city is saved from by the fear of the Legislature to tie too closely to the man who has undertaken the task of governing the city on behalf of the citizens who take too little time to govern it for themselves.

The rebellion in the ranks at home helped some. The fight made by the city clerk, who is not one of the followers of the boss, was a factor. Most important was that growing dislike of lawmakers to go back home to explain why they helped out a city boss. For the people, under the knowledge given them by a free press, and that means *The Times*, are beginning to understand and inquire.

The political boss lasts only as long as people who object to being bossed permit him to rule. He exists only when he is able to preserve the appearance of invincibility which frightens timid souls. He passes when the people really understand that he has no power at all and when it becomes unpopular to traffic in secret places for him.

Score one victory for real freedom. There are other triumphs in the offing.

THIS EDITORIAL, IN THE INDIANAPOLIS TIMES, EXPRESSED THE REAL POLITICAL SIGNIFICANCE OF THE DEFEAT OF THIS BILL

Will Taxes Ever Come Down?

By Louis Brownlow

From article LXXXIV of Mr. Brownlow's syndicated letters on municipal problems—Copyright, 1927, by Current News Features, Incorporated

"WILL city taxes ever come down?" That question is asked me by a reader who adds: "It seems to me that with the Federal Government reducing taxes nearly every year, the city taxes ought to come down a little."

I don't think my correspondent would have asked me that question if we Americans were willing to give to statistical tables of the costs of government a hundredth part of the attention we give to a statistical table such as the baseball box score.

The Federal Government has succeeded in reducing taxation because of two things, the cutting-off of war activities and the increase in the revenues above the amounts it was estimated the taxes would yield.

The actual running expenses of the Federal Government have increased.

The actual running expenses of the city governments have increased.

The city governments have no war activities to liquidate, and in most instances the taxes they impose do not yield unexpected surpluses.

The answer to the question is that city expenses will not be reduced, and that therefore city taxes will tend to increase rather than to decrease.

This tax increase may take the form of an increased tax rate on property, it may take the form of new taxes on new sources of revenues, both of which will be very evident to the public; and in other cities, perhaps more fortunate, it will take the form of an increased value of property so that the same old tax rates will yield more money.

The only plan that holds out any hope for any lessening of the burden is the substitution of scientific methods of municipal administration for haphazard rule-of-thumb methods, in order that a dollar will stretch as nearly its full length of one hundred cents as is humanly possible to make it stretch.

Why Municipal Expenses Continue to Mount

The reasons why city expenses will increase are several. The most important and the most inescapable is that the cities are growing. From the Census Bureau's Financial Statistics of Cities* it is as clear as can be that the bigger the city, the greater the expense of every service, the greater the actual outlay, and the higher the cost per capita for its inhabitants. As the cities grow, the costs grow.

Another reason is the demand for improved and extended services caused by the increasing complexity of city life. No city can get along today without traffic policemen, traffic lights, traffic paint markings on the pavement, and so on. These cost money.

No city today is willing to get along without many things that were formerly not heard of—swimming pools, for instance, and high school athletic fields—and these cost money.

Then the same old things that always have been a part of the city establishment cost more money, just as the services and institutions of private business of whatever character cost more than they used to cost.

Federal Expenses Increasing Also

That the actual operating costs of the Federal Government are increasing is testified to by Representative Martin B. Madden, the chairman of the House Appropriations Committee, and in legislative charge of the federal budget. In his formal statement at the close of the recent session of Congress he warned the country that these expenses would inevitably increase.

Senator Curtis of Kansas, the majority leader of the Senate, has issued a statement showing the gradual and steady increase of the expense of the Federal Government. He pointed out that the number of automobiles in this country had increased in the ten years from 1916 to 1926 from 2,500,000 to 22,500,000; and suggested that it might be possible that the business of the country was increasing in other ways, besides.

I do not wish to be regarded as a pessimist, for with respect to the cities of the United States I am emphatically an optimist, but I cannot truthfully say that there is any prospect whatever of any city that meets its obligations and maintains a sound financial policy being able to make any substantial decrease in its expenditures. On the other hand, increases are more to be expected.

*See THE AMERICAN CITY for March, 1927, pages 352-357; April, pages 516-521; and THE MUNICIPAL INDEX for 1927, pages 97-104.

EDITORIAL NOTE.—See also "Are We Spending Too Much for Government?—I. The Trend of Federal Expenditures," by J. L. Keddy, Ph.D., *National Municipal Review*, April, 1927, pages 246-250; and "Who Gets Your New Tax Billions?", by William P. Helm, Jr., in *Nation's Business*, April, 1927, pages 18-20.

Sanitary Supervision of Tourist Camps and Recreation Places

By Lewis S. Finch

Director, Water and Sewage Department, Indiana State Board of Health

EACH summer for the last four years an inspection of all tourist camps in the state of Indiana has been made by the Water and Sewage Department of the State Board of Health. The inspectors take samples of all water-supplies, investigate the methods of sewage and garbage disposal, and discuss unsatisfactory conditions with the owner or operator. When the laboratory examination of the water sample is completed, a report of the survey with recommendations is sent to the owner of the camp and to the health official in whose district the camp is located. It is then the duty of the health officer to require the correction of unsatisfactory conditions. If the recommendations are not carried out and the camp remains in an unsanitary condition, it is declared a health nuisance and may be ordered closed.

Courtesy of Indiana State Department of Conservation

VIEW OF CLIFTY FALLS FROM THE TOURIST CAMP AT CLIFTY FALLS STATE PARK, INDIANA

Improvement in sanitary conditions has resulted from this work, particularly in sewage and garbage disposal. In 1923, 85 per cent of the means of sewage disposal were unsatisfactory; this has since been reduced to 19 per cent. Of the facilities provided for garbage disposal in 1923, 84 per cent were unsatisfactory, while in 1926 only 19 per cent were not approved. Of the water-supplies examined in 1923, 26 per cent were found to be bad, but in 1926 this had been raised to 32 per cent, because the wells, etc., were more severely criticized on account of unsatisfactory surroundings and lack of proper protection than in preceding years.

Beginning in 1925, certificates of approval were issued to camps in which the sanitary conditions were satisfactory. Of 233 camps examined in 1926, 104, or 44.6 per cent, were thus approved. Of these approved tourist camps, 28 per cent were operated by municipalities, 11 per cent by semi-public agencies, as Kiwanis, Rotary Clubs, Chambers of Commerce, etc., and 61 per cent by private individuals. These figures apply only to tourist camps and not to permanent camps. The regulations under which these results have been obtained are as follows:

Rule 1. *All camps shall be under the supervision of the health officer having jurisdiction, who shall require that the camps be kept in a sanitary condition at all times.*

It is obvious that the inspector from the Water and Sewage Department, having under his supervision about two hundred camps located in all parts of the state, cannot give sufficient attention to each camp to determine that it is being operated satisfactorily at all times. For that reason, the camps are placed under the jurisdiction of the local health officials, that they may be able to require satisfactory operation of the camp at all times. If the camp is to be maintained in a sanitary condition, there must be an attendant responsible for those conditions. A camp without a paid attendant will not remain sanitary, for there are certain routine duties that must be performed.

Rule 2. *All camp sites shall be well drained.* The soil at the camp site should be sandy or loamy in order that there may be good drainage. The site should be high enough above any watercourse that a freshet will not inundate the camp.

Rule 3. *An adequate supply of potable drinking water shall be provided on all camp*

grounds. At all camps, water from sources other than a public supply shall not be used until it has been tested and approved by the State Board of Health.

Springs, if used, must be covered and protected against surface run-off and the entrance of small animals and insects. Dipping water from an open spring will not be permitted.

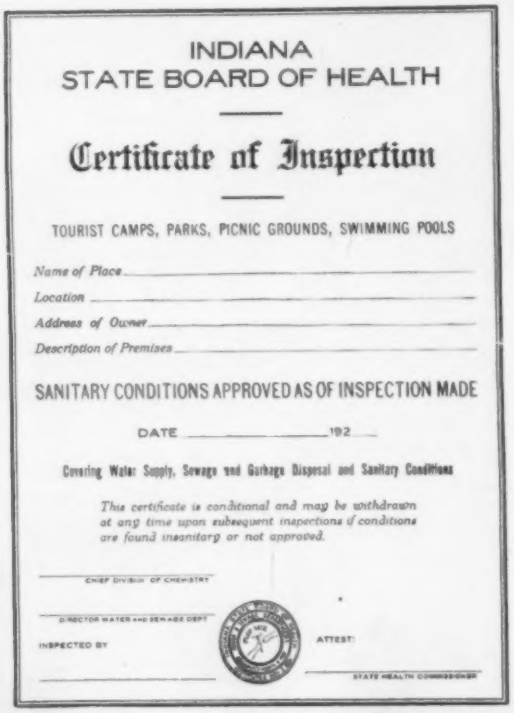
Wells must be tightly covered and protected from surface contamination. If a dug well is used, it should be water-tight to a depth of 10 feet or more. The waste water from the spouts of all wells must be carried away from the immediate vicinity of the well. This waste water must not be allowed to collect on the surface.

Wells should be 300 feet from a leaching cesspool, pit privy, etc., if possible. Under no conditions should any of these be closer than 100 feet to the well. No sewage should be discharged into a sinkhole, for when contaminated water enters limestone, it can travel miles without purification. The use of open wells from which water is drawn by means of rope and bucket will not be permitted.

Rule 4. Modern flush toilets shall be provided where sewer connections are possible. Where sewer connections are not possible, sanitary, flyproof privies, approved by the State Board of Health, shall be provided.

Open back, no-pit privies, are not sanitary and are not to be tolerated under any circumstances. Pit privies should not be used unless they can be located at such a point that they will not contaminate any water-supply.

Water-tight, shallow, concrete vaults, septic closets or tanks, and box and can privies, if properly installed and maintained, can be expected to give satisfactory service. Chemical closets of the tank type will also give satisfactory service if properly installed and maintained.



INDIANA
STATE BOARD OF HEALTH

Certificate of Inspection

TOURIST CAMPS, PARKS, PICNIC GROUNDS, SWIMMING POOLS

Name of Place _____

Location _____

Address of Owner _____

Description of Premises _____

SANITARY CONDITIONS APPROVED AS OF INSPECTION MADE

DATE _____ 192__

Covering Water Supply, Sewage and Garbage Disposal and Sanitary Conditions

This certificate is conditional and may be withdrawn at any time upon subsequent inspections if conditions are found insanitary or not approved.

_____ CHIEF DIVISION OF CHEMISTRY

_____ DIRECTOR WATER AND SEWAGE DEPT.

INSPECTED BY _____ ATTEST: _____ STATE HEALTH COMMISSIONER

CERTIFICATE OF APPROVAL ISSUED TO CAMPS IN WHICH THE SANITARY CONDITIONS WERE SATISFACTORY

WARNING SIGN POSTED AT IMPURE WATER-SUPPLY SOURCE

It should be borne in mind that the effluent from a septic closet or tank is by no means harmless and further treatment is necessary. Tank treatment alone, in general, is not considered sufficient treatment as required under the provisions of the order prohibiting the discharge of insufficiently treated sewage into Indiana lakes. Some form of secondary treatment is required before discharging into a lake.

Any method of sewage treatment or excreta disposal, to be satisfactory, must prevent the access of flies or animals to the excreta and prevent its scattering over the ground. All seat covers must be so arranged that they will close of themselves while not in use. The doors must be well fitted and also be made to close either by springs or weights. A vent from the vault or tank should be continued through the roof of the building, and covered with screen to prevent the access of flies. All other openings must also be screened.

Where shallow concrete vaults are used, a bucket of earth should be kept in the privy and a small amount of the earth placed in the pit after each use.

Whatever type of privy is used, it must be expected that unfailing attention will have to be provided, or unsatisfactory conditions will result.

Rule 5. All garbage and refuse shall be stored in metal cans with tight covers and shall be removed from the premises and disposed of daily. Garbage and refuse shall be disposed of by incineration or burial.

The farmers in the vicinity of the camp will ordinarily be very glad to have the garbage for feeding to their hogs.

Garbage must not be dumped into a lake or stream.

Rule 6. The health officer in charge of camps shall make and placard such rules and regulations as are necessary to govern the use of the camp and keep it in a sanitary condition.

Rule 7. Inspections of tourist camps shall be made under the direction of the State Board of Health as often as practicable, and a report of the findings with recommendations made to those in charge. If the recommendations are not carried out and the camp is found in an unsanitary condition upon a second inspection, the camp will be declared a nuisance to public health and ordered closed, and shall not be re-

opened until such time as the recommendations have been carried out.

While the foregoing regulations were adopted for tourist camps only, they apply to permanent camps or resorts as well. In a permanent camp, the milk supplies available should also be inspected and supervised by the local health officers.

Resorts

Many of these permanent camps or resorts are located around the shores of the lakes of the northern Indiana counties. The State Board of Health does not attempt to supervise closely the sanitary conditions in these camps, but leaves this entirely to the local health officials. No specific regulations have been made for these camps, their sanitary conditions being controlled under the provisions of the nuisance laws. Conditions in these camps are gradually improving, but much remains to be done before they can be considered altogether satisfactory.

The "Lake Order," promulgated by the Indiana State Board of Health and effective January 1, 1926, will indirectly improve conditions at many resorts. This order prohibits the discharge of untreated or insufficiently treated sewage into any lake in Indiana. To comply with this order, many resorts and communities will have to provide treatment for sewage that is now discharged directly into the lakes. This will result in better sanitary conditions at the many bathing beaches along the shores of these lakes.

These beaches, as well as the swimming pools in the cities, require close supervision if they are to be kept sanitary. Bacteriological examinations and sanitary surveys should be made to determine whether or not the water in the lake or stream is sufficiently pure to be safe for swimming.

Swimming Pools

In regulating the sanitary conditions at swimming pools, it must be impressed upon the patrons that the pool is a place of recreation and not a place in which to get clean. Soap shower-baths must be taken, and before entering the pool.

The State Board of Health has adopted swimming pool regulations, but as yet little has been done toward direct inspection and supervision. The Water and Sewage Department provides containers, in which samples of the water in the pool can be submitted for examination.

The swimming pool regulations provide that all pools must be registered with the local health officer as well as with the State Board of Health. Health officers have the power to order reasonable changes relating to sanitary conditions of the pool and its surroundings, and if it is deemed necessary, they can close the pool until conditions are sanitary and safe.

The bacterial quality of the water must meet the approval of the Water and Sewage Laboratory. Frequent tests are advised, and if possible a local laboratory should make daily examinations. In case of school swimming pools, this should always be possible. It is required that the total colonies of bacteria on standard agar media, incubated for 24 hours at 37.5°C, must not exceed 1,000 per cubic centimeter. B. Coli must not be confirmed in more than half of the one cubic centimeter portions of the sample of water taken from a pool. Any method of disinfection of the water which keeps it in a sufficiently pure state bacteriologically is satisfactory. Chlorine gas, chloride of lime, ozone, and ultra-violet ray are disinfecting agents commonly used.

Under regulations tentatively adopted by the Conference of State Sanitary Engineers, not over 20 persons should be admitted to the pool for each 1,000 gallons of clean water, and not more than seven bathers per 1,000 gallons should be allowed in a pool between disinfections. For an example, assume a fill-and-draw pool of 50,000 gallons capacity. Under the foregoing regulations, 50 x 20 or 1,000 people could use this pool before it would have to be refilled. However, only 7 x 50 or 350 people should use the pool without its being completely disinfected.

If a pool of the same capacity, but operated either as a "flowing-through" or recirculation pool, is assumed, and if the water is being replaced with new water or with filtered water at the rate of 2,000 gallons per hour, 20 x 2 or 40 bathers per hour could use the pool. If the recirculation period continued for 24 hours and the bathing were limited to 10 hours, there would be an accumulation of 14 x 2,000 or bathers who could use the pool in this period. of non-use. Thus 28 x 20 or 560 additional persons could use the pool during the 10-hour period, making a total of 560 + 400 or 960 bathers who could use the pool in this period.

In disinfecting water with chlorine, an amount should be used that will leave an excess of from 0.2 to 0.5 parts per million of chlorine in the water after it is disinfected. This excess chlorine will thus be available for continuously disinfecting the water. If this excess or residual chlorine is kept below 0.5 parts per million, no unpleasant effects, such as smarting eyes, unpleasant odors, etc., should be noted. The

amount of the excess chlorine can be determined by the use of the orthotolidin test. An untrained person can easily make this test. This department will furnish the ortholodin for the test, and will instruct anyone in the method of making it.

Persons with colds, coughs, skin eruptions, or infected eyes, should be excluded from the pool, for they are a real menace to others.

Supervision of Recreation Places

Much more could be said concerning the sanitary control of swimming pools, but the most important features have been considered. After all, no matter how modern the equipment may be, sanitary conditions can be maintained only by the close supervision of experienced operators.

The same applies to the tourist camps. If the operator or caretaker is not willing to work or is not capable of realizing the importance of maintaining sanitary conditions, regulations can do little except to give the health officer authority to bring pressure to bear.

Competent operators can be obtained if they receive sufficient pay. If sufficient funds are at hand, more money is available for such salaries. For that reason, the camp in which a fee is charged is often kept in much better condition than the free camp.

It is in interesting the operators in maintaining satisfactory conditions, or forcing them to do it if other methods fail, that the local health officials can be of the most service. The State Board of Health has no means of keeping close control over these recreation places, but can only cooperate with the local men. The local health authorities are on the scene and upon them rests the responsibility of seeing that sanitary conditions are maintained.

The Water and Sewage Department is the branch of the State Board of Health having jurisdiction over the maintenance of sanitary conditions in recreation places. That department will be glad at any time to cooperate in any matter pertaining to sanitation.

City Planning as an Aid to Traffic

THAT failure to efficiently control traffic, prevent traffic congestion, and lessen the number of traffic accidents, especially in our large centers of population, is a responsibility which cannot generally be charged against city officials, is the opinion of G. E. Lommel, Associate Professor of Topographical Engineering, Purdue University, as expressed in a paper presented at the University's Thirteenth Annual Road School, held January 17-21. Said Professor Lommel:

"With funds entirely inadequate to perform the major operations on the civic structure which are necessary to afford permanent relief of the traffic congestion; with the number of vehicles increasing rapidly; and with building operations in the highly congested areas ever on the increase, it is hardly possible for city officials to keep pace with the problem. In fact, when we stop to analyze the situation, we are forced to the conclusion that, with conditions as they are, it is really surprising that the problem is not much more acute. City officials and police departments have done and are doing good work and have contributed a great deal to the science of traffic control. However, we must not lose sight of the fact that regulation of our traffic of to-day on our streets of today is the problem which these officials are attempting to solve. What about tomorrow and next year or ten years form now?"

An ideal arrangement of the transportation plan of a large city, as outlined by Professor Lommel, would include the following:

1. The fewest possible number of tracks which would adequately serve the transportation needs of the city. This usually means a unionization project involving several railroads.

2. Least interference of these tracks with street traffic. This phase normally means track elevation plans.

3. Track facilities and freight terminals as a part of the waterfront development, which obviously makes possible an efficient transfer of commodities from one agency to another.

4. The shortest possible haul from the manufacturing establishment to the freight station.

5. Careful routing and scheduling of surface-car service to all parts of the city.

6. Elimination of competition between busses and street-car system. The bus has its proper place in the whole scheme of transportation. That place, however, is not as a competitor of the surface car. It is best used in outlying districts as a feeder to the surface car or in aiding the surface car during the peak of the traffic load.

After discussing the importance of comprehensive planning and zoning as factors in the facilitation of street traffic, the speaker closed his paper with the following list of "impressions":

"1. That city planning as a municipal function is highly desirable and in our large cities absolutely necessary.

"2. That every city large or small becomes a better place in which to live and work if it is developed according to a reasonable plan.

"3. That zoning is constitutional.

"4. That no single feature of planning should be attempted without recognition of other problems. The plan should be a comprehensive one.

"5. That in planning there is offered material assistance in the solution of traffic difficulties.

"6. That planning offers to the citizens of a community one thing which is not possible under the ordinary condition of affairs, and that is an established and definite policy of public improvements continuing from one administration to and through the next.

"7. That planning does not necessarily mean large expenditures of public money for the creation, revision or addition of the civic structure. It does mean spending at the right place and at the right time.

"8. That no plan is worth a German mark unless it is used."

Tests for Selecting Police Sergeants

Aids to Determining Traits and Qualifications Which Make for Success in Police Work

By Fred Telford

IN conducting its investigations on which this report is based, the Bureau of Public Personnel Administration found that civil service examiners and police officers in administrative positions generally have no very clear ideas as to the traits or qualifications that make for success in police work, and that for this reason it was impossible to get any satisfactory criterion against which to measure the tests in the experimental stages. The staff of the Bureau came to the conclusion that some important traits are not commonly considered at all in estimating the success of a police officer, that other traits are over-emphasized, and that no very satisfactory method of measuring the traits considered desirable has been evolved.

Conclusions Based on a Year's Experiments

Some rather startling conclusions regarding the qualifications needed by police sergeants and the current methods of selecting the patrolmen who are promoted, are set forth in the March issue of Public Personnel Studies, which is published by the Bureau of Public Personnel Administration at Washington, D. C. The conclusions, summarized in the accompanying article, are something more than offhand opinions, being based upon experimental work carried on in the last year by the Bureau in cooperation with civil service commissions and police departments.

General agreement was expressed that ability to size up situations and people and get along well with others is an important trait in a police sergeant; but the tests given to patrolmen seeking promotion usually take slight account of this trait. As has often been pointed out before, it was found that too little account is taken of the ability of those seeking promotion to read and interpret laws and ordinances. For example, almost half of the 300 patrolmen and sergeants to whom the tests were given for try-out purposes were not able to state that the writ issued by a court directing a person to appear before the court to give testimony is called a subpoena.

In developing the tests the Bureau followed its usual plan of arranging a considerable amount of material believed to have diagnostic value in tentative form and giving the experimental tests to patrolmen, sergeants, university students, and others. About two-thirds of the material was used by the Baltimore Board of Police Examiners in a promotion test for sergeants taken by 228 patrolmen. Arrangements were also made by which patrolmen and sergeants in Trenton, Yonkers, San Diego, and the South Park Commission of Chicago were given all of the material. In addition, 22 students in a class in municipal administration at the University of Chicago took the tests. With the data as a basis, the tests were revised, though great difficulty was encountered in determining what items were valuable and what were valueless, because of the impossibility thus far of securing any agreement as to what police officers are or are not successful in their work.*

* The tests as revised are available in the form of mimeographed booklets of 35 pages, which will be supplied to examiners and administrative police officers by the Bureau of Public Personnel Administration at the approximate cost of paper, mimeographing, and shipping. A sample will be sent to any examiner, examining body, or administrative police officer for 20 cents in postage, and a copy of the March issue of *Public Personnel Studies* containing an article describing the method of developing the tests can be obtained for 50 cents.

The nature of the tests and the weights assigned the individual tests are indicated by the following outline:

Test Number	Test Name	Time (Minutes)	Relative Weight
1.	**Laws, Ordinances, Rules, Regulations, and Procedure** (Section A consists of 40 statements in the completion form, each of which requires the competitor to write in a word or a phrase to supply missing information. Section B consists of 20 questions in the multiple choice form, each with four answers from which the competitor chooses the best one. Section C consists of 100 statements in the true-false form; the competitor is to read each statement and indicate whether he considers it true or false. Section D consists of a description of 20 law violations; the competitor is to indicate for each the legal charge he would place against the violator on arresting him.)	150	6
2.	**Situations Involving Police Problems** (Three situations involving police problems are described at some length and the competitor is asked to indicate whether he considers as true or false 10 statements regarding the elements of each situation or the procedure to be taken.)		
3.	**Understanding of Printed Matter Relating to Police Work** (The competitor is asked to indicate whether he considers as true or false 20 statements relating to two selections quoted in full; one selection is from police rules and regulations and the other a part of a law or ordinance or other printed matter.)		
4.	**Social Intelligence** (Section A consists of 20 statements in the multiple choice form, each with four answers from which the competitor chooses the best one. Section B consists of 75 statements in the true-false form; the competitor reads each statement and indicates whether he considers it true or false.)		
5.	**Memory for Oral Directions** (Section A consists of 10 questions as to the content of an oral order such as might be given to a police officer. Section B consists of the recording from memory of as many facts as possible, up to 10, from a description containing more than 10 items.)	10	
6.	**Abstract Intelligence** (The use of one of the standardized tests of abstract intelligence, preferably the army alpha tests, is recommended.)	45	2
7.	**Length of Police Record** (It is suggested that a passing mark be given to those who have the minimum amount of police service required for eligibility for the tests and that additions be made in accordance with the custom in the particular jurisdiction for additional length of service.)	..	½
8.	**Service (Character of Police Work as Patrolman)** (A rating as to the character of service as patrolman is to be obtained by the customary method.)	..	1½
9.	**Physical Condition**	..	No Rating

The tests include 365 items of information which constitute a pretty thorough sampling of the whole field of police work. The material is in such form that the person tested indicates his answer either by writing a word or a phrase or simply by making a cross or encircling a letter.

The nature of part of the material is indicated by the following excerpts, which constitute the only part of the tests that will be published:

TEST 1—LAWS, ORDINANCES, RULES, REGULATIONS, AND PROCEDURE

Section A

8. A five-ton truck, a Ford sedan, a Packard touring car, and a motorcycle are driving along a street. The one which should, according to traffic regulation, drive nearest the curb is .....
16. Cases of violent death must be investigated and reported upon by a county officer called .....
24. The device used for stopping arterial bleeding by twisting a cloth tight is known as .....
33. The method of identifying criminals by means of certain bodily measurements is known as the ..... system.
40. Public or private employees who deliberately fail to perform their duties efficiently in order to injure or embarrass their employers are said to practice .....

Section B

8. The first of the following things which a police officer who discovers a fire should do is:
——To turn in an alarm
——To warn people in adjoining houses
——To notify the station-house of the location of the fire
——To see if there are any persons in the burning building
13. The sentence of a person found guilty of a crime is pronnounced by:
——The judge
——The jury
——The state's attorney
——The prosecuting attorney
20. It is generally accepted that the one of the following forms of evidence which is most reliable is:
——Circumstantial evidence
——Testimonial evidence
——Real evidence
——Cumulative evidence

Section C

T F 10. An automobile overtaking and passing another on a street on which traffic both ways is allowed must always pass on the left.
T F 20. At street intersections a vehicle coming from the driver's left has the right of way when there is no traffic officer on duty.
T F 30. A police officer talking to another over the telephone identifies himself by giving his rank, full name, and command.
T F 40. Autopsies are frequently held to determine whether a person has died of typhoid fever.
T F 50. Every day a public nuisance is maintained, after proper warning notice, is a separate and distinct offense.
T F 60. The court may refuse to accept any person as bail who is not a resident of the county where bail is offered.
T F 70. Two patrolmen in uniform walking home together after going off duty need not keep step.
T F 80. Blackmail means using the mails to defraud.
T F 90. A person who has fainted should not be given a stimulant.
T F 100. A man who ignores a "no trespassing" sign and walks across his neighbor's property may be arrested and fined.

Section D

10. A man leaves his car parked on a slight hill in front of a school building. After school some boys start th engine and the car hits a lamp-post at the foot of the hill.
Charge (against the man):.....
20. The young cashier of a bank was found short $5,280 in his accounts. The young man admits the shortage but begs the officials not to prosecute him. He gets his father to make good the shortage and the bank officers agree to let the matter drop.
Charge (against the bank officers):.....

TEST 2—SITUATIONS INVOLVING POLICE PROBLEMS

Directions: Below you will find a brief description of three situations such as may arise in the course of police work. Following each description of a situation are ten statements which you are to mark as true or false. Read each description carefully and then indicate whether you consider each of the following statements true or false by encircling the T or the F. You may refer to the description as often as you please. Do not make any mark except to encircle the T or the F.

SITUATION NUMBER.....

In a certain city a state law prohibits any person from gambling for money or other valuable thing, either as keeper, dealer, or player. For a long time in this city, gambling, both professional and social, has been quite common. The newly elected Mayor has promised in his campaign to stop all gambling. Sergeant B is given a squad of six men and instructed to break up all gambling and arrest all gamblers. In a series of raids the first evening he finds: (1) a book-making establishment in a barber shop which places bets on horse races and pays winners; (2) a church bazaar where a floor electric lamp is being raffled for the benefit of the church; (3) a poker game with a 25-cent limit in a club whose members are business men; and (4) a bridge party at the Mayor's home with the stakes half a cent a point.

T F 1. Sergeant B should arrest the proprietor of the barber shop.
T F 2. Sergeant B should, before making arrests, issue a public warning through the newspapers.
T F 3. The state law is one that never can be enforced and therefore Sergeant B should make no serious attempt to carry out the Mayor's instructions.
T F 4. Sergeant B should make no arrests but should go to the Mayor, report what he has found, and ask for further instructions.
T F 5. In view of the Mayor's positive instructions, Sergeant B should immediately make arrests and confiscate gambling paraphernalia instead of giving warnings.
T F 6. Anybody arrested, even if known to be reliable, should be taken to the station as evidence that Sergeant B and his squad mean business.
T F 7. Sergeant B should pay no attention to anything which is not gambling under the city ordinances.
T F 8. Sergeant B should arrest those he finds playing bridge at the Mayor's home.
T F 9. The poker chips, cards, and other paraphernalia at the business men's club should be confiscated.
T F 10. Sergeant B should inform the managers of the church bazaar that he is violating the state law and direct him to discontinue the raffle and, as far as he is able to do so, to return the money for chances already sold.

TEST 4—SOCIAL INTELLIGENCE

Section A

8. A police officer, entering a room following a pistol shot he has heard, finds a man apparently dead on the floor and several persons in the room. His best procedure is:
——To have the man on the floor carried to an adjoining bedroom and a doctor called.
——To try to find out who did the shooting and, if he succeeds, arrest the guilty man.
——To keep everybody in the room and try to find out from others living nearby what happened.
——To place everybody present under arrest, permit nobody to leave the room or disturb anything, and notify the station.

10. Joe Brown, age thirteen, has escaped for the third time from the house of correction, to which he was sent for shoplifting. He has been stealing small articles since the age of nine and has been arrested a number of times. He will be likely:
——To continue to steal as before.
——To go back to school and work hard.
——To realize that honesty is the best policy and reform.
——To be contented with routine work on a farm.

Section B

5 T F Professional criminals can as a rule be turned into law-abiding citizens by performing surgical operations upon them.
15 T F A police officer should never under any circumstances send or recommend anyone to a charitable institution operated by a religious denomination.
25 T F Police officers commonly have confidence in juvenile courts.
35 T F A square jaw is a sign of will power.
45 T F An ambulance chaser is any person who runs after ambulances on the streets.
55 T F A common cause of prostitution is inability to make an honest living in competition with normal persons.
65 T F The Binet tests, sometimes used for measuring the mental age of children and others, are still too theoretical to be of practical value.
75 T F The testimony given by eye witnesses of an accident or violent act is unreliable.

State Requirements as to Municipal Accounting and Budget Making

An Analysis by Louis Brownlow of the Tabulation Compiled by THE AMERICAN CITY *and Published in* THE MUNICIPAL INDEX *for* 1927, *Pages* 116-119

ONLY nine of the states require cities and towns to conform to a standard and uniform system of accounting, which may vary in some of them for cities of different sizes. They are: Idaho, Indiana, Iowa, Michigan, New Hampshire, New York, Pennsylvania, Virginia and Washington. The Virginia law was passed only in 1926 and consequently is not yet fully in effect.

In addition to these states that specify a uniform system by law, approaches to uniformity of accounting methods are found in Kansas, where the cities and towns that are members of the Kansas League of Municipalities have adopted a system; Maine, where the state auditor is authorized to install a system on request of the municipality; Mississippi, where the state auditor may provide a system for a city or town upon the approval of the governor; New Jersey, where the state commissioner of accounts may provide a system; Ohio, where the constitution empowers the legislature to require uniform financial reports from cities; and Wisconsin, where the state tax commission has authority to enforce a system which has been installed in about seventy municipalities of the state.

Municipal budgets are required by state laws in the following twenty states: Indiana, Iowa, Kentucky, Louisiana, Mississippi, Nevada, New Hampshire, New Jersey, New Mexico, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, South Dakota, Utah, Virginia, Washington, West Virginia, Wisconsin.

In addition to these, New York requires what is substantially a budget for all municipalities except towns; California requires a budget in larger cities; Illinois requires an annual appropriation ordinance; cities in Kansas under the city manager plan must have budgets; and, without any requirement of state law, many cities in other states actually have a budget.

Twenty states have no requirement for either a budget or an accounting system for the cities. They are: Alabama, Arkansas, Arizona, Colorado, Connecticut, Delaware, Florida, Georgia, Maryland, Massachusetts, Minnesota, Missouri, Montana, Nebraska, Oklahoma, Rhode Island, South Carolina, Tennessee, Texas and Vermont.

Safeguarding the Development of Suburban Towns

Planning and Zoning Must Precede Subdivision and Building Booms

By Jacob L. Crane, Jr.
Town Planner, Chicago

VARIOUS suburban communities in the Chicago district have illustrated in a spectacular way the vital necessity of establishing zoning and general development plans before the tide of population flowing out to the suburbs starts a subdivision and building boom in such a town. Niles Center, almost bordering the city of Chicago on the north, offers an excellent example of the difficulties arising when town planning and zoning are not undertaken until after the subdividing is nearly completed. On the other hand, several small villages which had established their zoning and town plans just in time to guide the boom development illustrate the great economy and the vastly more satisfactory results to be secured by this foresight. In the latter class Lake Bluff, Libertyville, Mundelein, Barrington, and Flossmoor may be listed. A number of other towns, such as Highland Park, Winnetka, Kenilworth, Oak Park, and Glen Ellyn, have been able to guide their boom development by establishing town plans while it was still possible to accomplish the most essential control.

A typical general development plan for a suburban village is reproduced herewith. In the communities where such town plans have been prepared and adopted, a zoning ordinance classifies the various types of districts within the town. Ordinarily, in the strictly suburban town there are four classes of districts, namely; (1) general commercial, providing for lumber yards, etc.; (2) retail business; (3) districts permitting two-family flats or small apartment house, and (4) the single-family house districts, which cover the bulk of the town area and in which, for different towns, the lot size required for each dwelling ranges from one-seventh to one-half an acre, depending upon the character of the community and of the land to be developed.

The street and road plan establishes the framework for subdivisions within the town and, under the Illinois law, for a distance of a mile and a half outside the corporation limits. All new subdivisions are required to conform substantially to the town plan in the matter of these streets and roads. The town plan also designates business and commercial districts outside the municipal limits so that new subdivisions can be laid out to provide these important features at the proper locations.

In Illinois the development of parks is usually undertaken by park districts, and the school and playground program by school districts, both separate from the municipal corporation. The

town plan establishes the site locations for a program of land acquisition and development by these authorities. In addition to the zoning ordinance, other ordinances are usually passed establishing subdivision regulations, requiring extra setbacks at undeveloped business property, setting up a building code, and sometimes establishing an informal architectural control over all new buildings. Detail plans usually provide for street corrections, rearrangements of private property where this is desirable, and the location of public buildings and development of civic centers. The preparation of these town plans costs little when compared to the large economies effected. And, since most of the effectiveness of the town plan and zoning ordinance is brought about by means of control, rather than by the expenditure of public funds, it is fair to say that the economies and enormously more satisfactory results secured by a town plan adopted ahead of intensive development cost virtually nothing at all.

A Contrasting Example

In contrast to the results obtained in such towns as the one illustrated, Niles Center has undergone a tremendous subdivision boom during the past three years as the result of a rapid-transit extension from the city. Between 4 and 5 square miles, some 2,500 acres of land, have been subdivided during this period. While the Village Board and Village Engineer have, in most cases, been careful to secure continuity in the street system, the lack of a town plan and zoning plan have resulted in several critical and now irremediable blunders in the ground plan of this rapidly growing suburb.

Some of the essentials of a town plan, such as the requirement for 80-foot dedications on all business streets, have been established, and a zoning plan has been prepared; but, on one hand it is now impossible to develop a really adequate and properly designed street system, and on the other hand, the best that the zoning ordinance can do is to confirm the restrictions established by the subdividers in laying out their property. As a result of this last factor, probably five times as much business property as the community will ever require has been established in the subdivision of the land and confirmed in the zoning ordinance.

Zoning is still worth doing, because it will protect the great bulk of the property, much of which is unrestricted, against encroachment by miscellaneous or objectionable uses. But even in the residential property, the price at which the lots were sold and the expectations of the speculative purchasers make it impossible now to establish sane, reasonable zoning control for the most logical and, in the long run, most profitable use of all of the property. In Niles Center, as elsewhere, the subdividers have seldom raised objections to reasonable regulations imposed on all subdividers alike, but in a case like Niles Center the subdivider of each tract (and there were several hundred subdivisions in this boom) ran the risk of undesirable subdividing and restricting around him, or else he reduced his standards to what might be expected from the least conscientious of the real estate operators. The village officials did what they could in the whirlwind which struck them following the extension of the transit line. So there is little to be said except to draw the moral that wherever it is humanly possible to do so, the town planning and zoning project should be undertaken and established ahead of the boom. Even the littlest town, where its destiny is evident, is entitled to this common-sense application of foresight in its development.

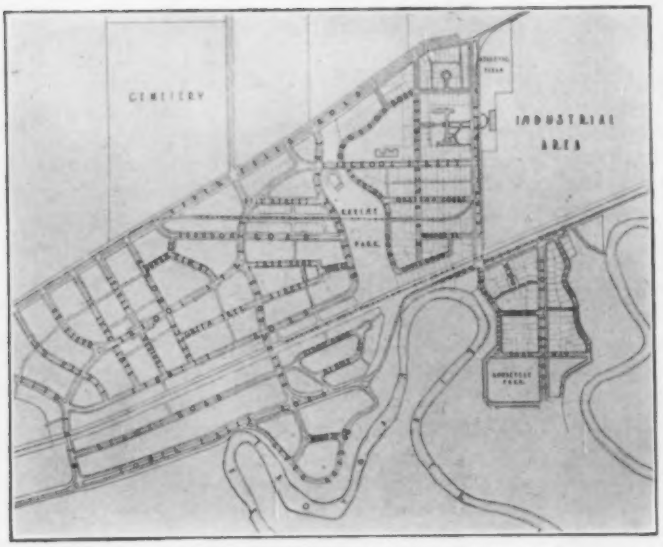
An Industrial Village of Home Owners

By Rhys G. Thackwell

SURROUNDED by green hills and partly tucked in by a bend in a little river, Kohler village in Wisconsin has no grim and forbidding architecture, but presents the picturesque view of a model community, planned with exceptional care and perhaps prophetic of a new trend in making things of beauty of industrial towns.

Kohler was established about eight years ago. The village was not laid out by any one city planner, but the plan has been the work of various agencies cooperating. Two or three years before construction was started, Walter J. Kohler and Richard Philipp, a Milwaukee architect, made a tour of most of the notable industrial villages and garden cities of America and of Europe. Various town planners and landscape architects have cooperated with the Kohler organization and architects in the development of the project. For the last two years Olmsted Brothers have been retained as counsel on the town plan.

In the development of the community, ample allowance was made for parks and playgrounds. Certain space was reserved for the shopping district. The villagers own their own homes. There is an American Club in Kohler which serves as a community center and also as a



STREET PLAN OF KOHLER, WIS.

home for the unmarried men employed by the company and for men whose families dwell at some distance from the town. There are rooms for 250 men and lounging and reading rooms, sun parlors, bowling-alleys, billiard-rooms, a modern laundry, and excellent bath and plumbing facilities. There is also a lunch room in the factory.

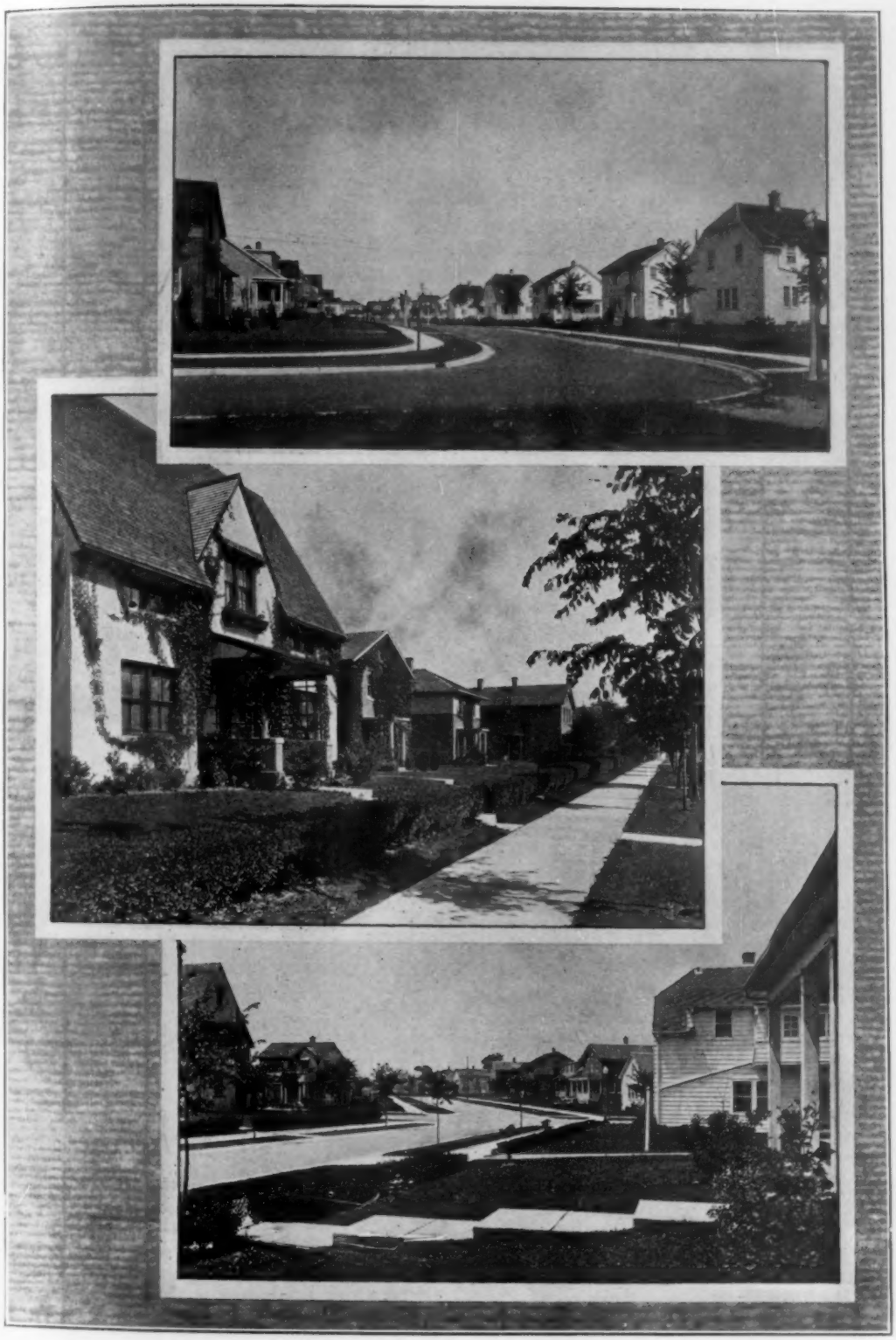
Privileges of the club are provided, with board and room, and laundry service, at $40 a month. Meals are served to members of the Kohler organization at from 27 to 29 cents each.

Homes are built by the Kohler Improvement Company and sold at cost, employees of the Kohler Company being eligible to buy. Financing is provided by a local building and loan association in which many of the villagers own stock. Houses for workers and superintendents range in cost from $5,000 to $12,000.

Though built by the Kohler Company and its subsidiaries, the village is not run on a paternalistic basis, but is an incorporated community with the regular village form of government under the Wisconsin laws.

Photograph by Aerial Photographic Service, Inc., Chicago, Ill.

AIRPLANE VIEW OF KOHLER AND ITS SURROUNDINGS



THREE VIEWS IN KOHLER
Showing Street Design and Types of Workmen's Homes

Classifying and Financing a Street-Lighting System

By E. A. Kemmler
Highway Engineer, City of Akron, Ohio

THE tremendous improvements in the intensity and artistic character of street illumination in recent years have been accompanied, very naturally, by increased costs to the taxpayers. An adequate street-lighting system, without ornamental features, can be installed and furnish all-night service at an average cost of about one dollar per inhabitant. But once the ornamental or boulevard system is introduced and becomes popular, the costs begin to mount, and the problem of balancing the budget becomes more and more difficult if the entire cost of lighting is paid from general revenue. Akron's method of meeting this difficulty may therefore be of interest.

First, the entire street system was classified into four groups or zones, and a standard intensity of illumination adopted for each group. The classification is as follows:

Standard Illumination

Class A. Business Zones
600-c.p. incandescent
200-ft. spacing—overhead wiring
Ornamental brackets on metal trolley poles
Rate—$52 per lamp per year

Class B. Main Thoroughfares
600-c.p. incandescent
360-ft. spacing
Mast-arm suspended
Rate—$48 per lamp per year

Class C. Main Residential Highways
250-c.p. incandescent
240-ft. spacing
Mast-arm suspended
Rate—$28 per lamp per year

Class D. Residential
100-c.p. incandescent
240-ft. spacing
Mast-arm suspended
Rate—$18 per lamp per year

Next, the following policy was promulgated: Standard illumination will be provided by the city at large. When a Class D residential street becomes a Class C or main residential street, it is entitled to Class C lighting, and so on from C to B and B to A. Whenever the owners on a street or group of streets want more intensive illumination, or an ornamental or boulevard system, they can have it without question; all they need to do is present a petition, signed by owners of at least a majority of the frontage, whereby they request that the cost of the proposed illumination in *excess* of that of the adopted standard be assessed against their respective properties.

Many owners have taken advantage of this policy, and today 1,720 out of the 7,550 street lamps are of the ornamental type. The excess cost which is assessed against the property varies from 10 cents per foot front per year in the residential section to 75 cents per foot in the "white way" business section.

In this way every group of owners can get just the kind of lighting that they can agree upon and are willing to pay for. The city's budget is protected and the charge of favoritism is impossible.

Court Decisions Relating to Public Health

(From *Public Health Reports* for March 11, 1927)

City Held Liable for Pollution of Stream.—(South Dakota Supreme Court; Geller *v.* City of Madison et al., 210 N. W. 978; decided December 6, 1926.) The plaintiff occupied land which was crossed by a small stream. The defendant city discharged its sewage into the said stream immediately above the plaintiff's premises, and by reason thereof the stream became so polluted as to cause such premises to be uninhabitable. The plaintiff brought action against the city for damages, and the city contended that it was not liable unless it was shown to have been negligent in the construction of its sewer system. One of the provisions of the state constitution provided that "private property shall not be taken for public use, or damaged, without just compensation." The Court rejected the city's contention, stating as follows:

> In some states whose constitutions do not contain the provision as to damaging, the courts have held as contended for by appellant. But this court has repeatedly held that cities are liable for consequential damages arising from the construction of improvements where no negligence is proven. The law of this state is well established upon that point.

City Ordinance for the Collection and Removal of Garbage and Refuse Upheld.—(Arkansas Supreme Court; Porter et al., *v.* City of Hot Springs, 287 S. W. 585; decided November 8, 1926.) An ordinance of the city of Hot Springs authorized the board of public affairs of the city to enter into a contract for a period of years with some suitable person for the removal of garbage and other refuse, and prohibited the removal of such substances by other persons. A provision of the ordinance, however, authorized the issuance of permits to persons for the removal of "kitchen refuse commonly known as swill." This ordinance was held valid in an action brought to restrain its enforcement.

A Few Governing Principles of Regional Planning

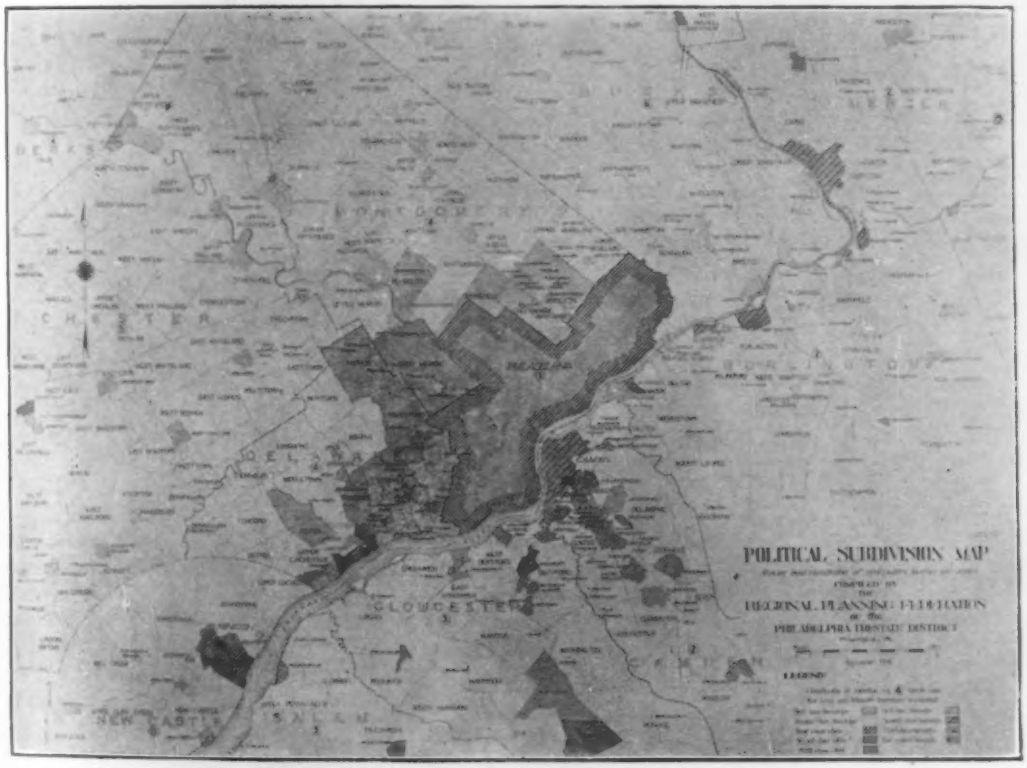
As Observed in the Philadelphia Tri-State District

By Russell Van Nest Black

Planning Engineer

REGIONAL planning comes in recognition of the need of extending planning efforts beyond city boundaries to the inter-relation of communities and groups of communities. Growth of cities, population, and industry isn't a matter of political unity. It *is* a matter of *physical* unity limited, controlled, and guided by natural physical things such as waterways, mountains, climate, soil, and by man-built physical things such as streets, railroads, parks, sewers, water-mains, houses, and factories. Planning problems, therefore, do not necessarily—and almost universally do not—split on political boundary lines. These problems are coextensive with the topographic or economic unit, whatever it may be—two or three communities, or half a state.

The extent, character, and minuteness of detail of planning problems depend largely upon the size and scale of the region. The region comprising the Philadelphia Tri-State District—some 3,500 square miles in area and extending northward to Trenton and southward to include Wilmington—has a community of interests in water-supply; purification of streams; trunk highways; coordinated rail, water, and air transport facilities; great regional parks and playgrounds; and a few other such major factors in coordinated development. Within this Tri-State District are a half-dozen sub-regions each with its own more local problems. Among such sub-regions are those of Trenton, Camden, Philadelphia, Chester, and Wilmington. These sub-regions have many problems, such



THE PHILADELPHIA TRI-STATE DISTRICT COMPRISES 357 SEPARATE GOVERNMENTAL UNITS (TOWNSHIPS, BOROUGHS, CITIES, AND COUNTIES) WITH GREATLY VARYING PLANNING POWERS AND EACH WITH ITS LIMITED PLANNING JURISDICTION

as local highway connections, drainage and flood control, sewerage projects, and the provision of recreation, which are entirely their own concern and responsibility and which are in no way related to adjoining areas or to the region as a whole. Again, within each of these sub-regions are the individual communities with their even more local problems. Back to the greater region again—beyond it is a more extensive region taking in Atlantic City, Reading, Easton, Lancaster, and other nearby cities. In this extensive region the common problems are largely limited to those of transportation —highway, rail, water, and air.

The first principle in regional planning, therefore, is to limit the problems for study to those that come within the community of interest.

Community of Interest Determines the Problems

Where a planning body has been set up for the primary region, such as the Tri-State District, and not for the sub-regions, such as those of Trenton and Wilmington, the central planning body may advantageously extend its functions to include the major problems of those sub-regions. A safe guide in a proper limitation of the scope of a regional plan is to confine it to those problems which do not begin or end within a single existing planning jurisdiction.

In practice, a regional plan is concerned with implanting recognition of sound planning principles throughout its area. It is very materially interested in bringing about a proper relationship of homes to factory; in the even balance between recreational and educational facilities and population density; and in the healthful and orderly distribution of population. And to this end the regional plan may well set up standards of development and illustrate and promote these standards by practical illustration, such as the location and design of a neighborhood playfield, a community park, a local zoning ordinance, or a plan of a model subdivision plat. The important thing is not to get sidetracked by these local problems and see in them the end.

Successful regional planning depends entirely upon intelligent cooperation between the several political units involved. Whatever step may best initiate this cooperation in any particular locality is the right step in bringing about a regional plan.

Usually, the idea can best be launched through an unofficial group of farsighted, public-spirited citizens. The advantages of regional planning and the benefits to be derived from it are as yet too little known for the electorate to demand planning action of their governments. And elected officials, no matter how farsighted individually, are naturally slow and reluctant to undertake such little-understood projects without evidence of public demand. The regional plan, in its present stage of development, therefore, is in many instances most satisfactorily initiated and supported through its early years by some unofficial group.

The job of this unofficial body is threefold: to gain financial support; to study the region and prepare a comprehensive master plan; and to round out public sentiment to the point of continuing and perpetuating the planning study and the plan.

Gaining public support is a matter of impressing landed and business interests with the sound economy, immediate and ultimate, in making all public improvements in accordance with a well-thought-out and scientifically coordinated plan. Gaining financial support must precede engineering studies and must continue through the operation until the project is taken over by the public. The amount of funds available should be commensurate with the task. It is easy to convince a practical man of the soundness of the planning idea and of a properly worked-out plan, but he has reason to doubt that practical results may come from attacking the tremendously responsible job of planning a region in a trifling manner with a picayune budget. Small good can come from "hunting grizzly bear with a pea shooter." A small start may well be advantageous. The project may be all the better founded by growing along with public sentiment. But public sentiment and public demand, once awakened, grow fast. The regional plan must keep abreast of them—rise on the flood and establish itself at the crest, or fall under its own accumulated weight, to die or painfully recover itself and make its way up all over again.

The comprehensive master plan, the first picture or mapped goal for the region, should be completed within a period of from three to five years from the time of publicly launching the project. From the time of presentation of the master plan, the work would evolve itself into a matter of continuous study, change and development to meet changing needs and conditions.

Collect Data on Major Problems Only

The first step in making the regional plan is the collection, mapping, filing, and plotting of all such available information as to existing conditions as may be in scale with and have bearing upon such major problems as are of regional concern. To go further than this in

data collecting serves merely to clutter up the files.

Character and scale of base maps will depend upon the size and nature of the region under study, but for the Philadelphia District two general base maps will probably suffice for all practical purposes: one, on a single sheet, at a scale of about a mile to the inch and used for plotting general survey data and diagrammatic presentation of planning proposals; the other, at a scale of about 2,000 feet to the inch, made in sections, and used for making and presenting the more detailed and exact planning studies and recommendations. If more reliable topographic data are not available, the U. S. Geological Surveys may be used for the base maps. As the project advances, however, more accurate and larger-scale topographic maps should be had. Preliminary to the large-scale, accurate topographic map, the region under study should be laid out under a good triangulation survey which may serve as a reliable base for the tying-in of more detailed surveys for widely separated areas as one by one they come ripe for development. Aerial photographic maps, as supplement to topographic maps and physical condition surveys, are indispensable to most effective planning.

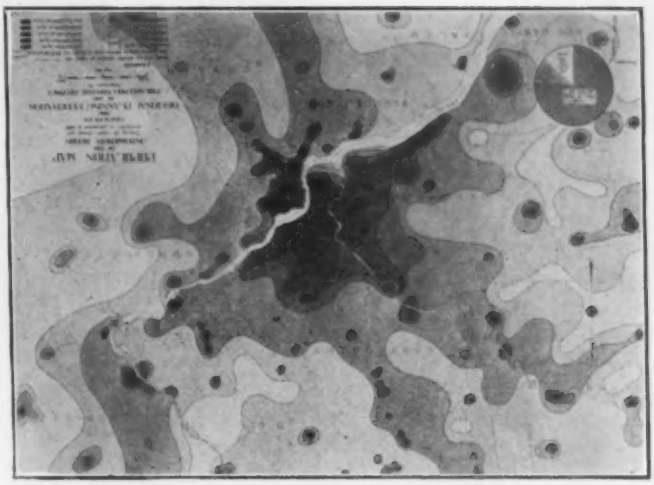


DIAGRAM SHOWING DISTRIBUTION OF POPULATION IN THE PHILADELPHIA TRI-STATE DISTRICT ACCORDING TO THE 1920 CENSUS

Lines of transportation, the adaptability of land, and the existence of such natural barriers as the river—not political boundary lines—have been the determining factors in the flow of population and in the direction of public improvements

Planning studies should be based upon a full knowledge of existing physical conditions and with an understanding and appreciation of the social and economic characteristics of the region.

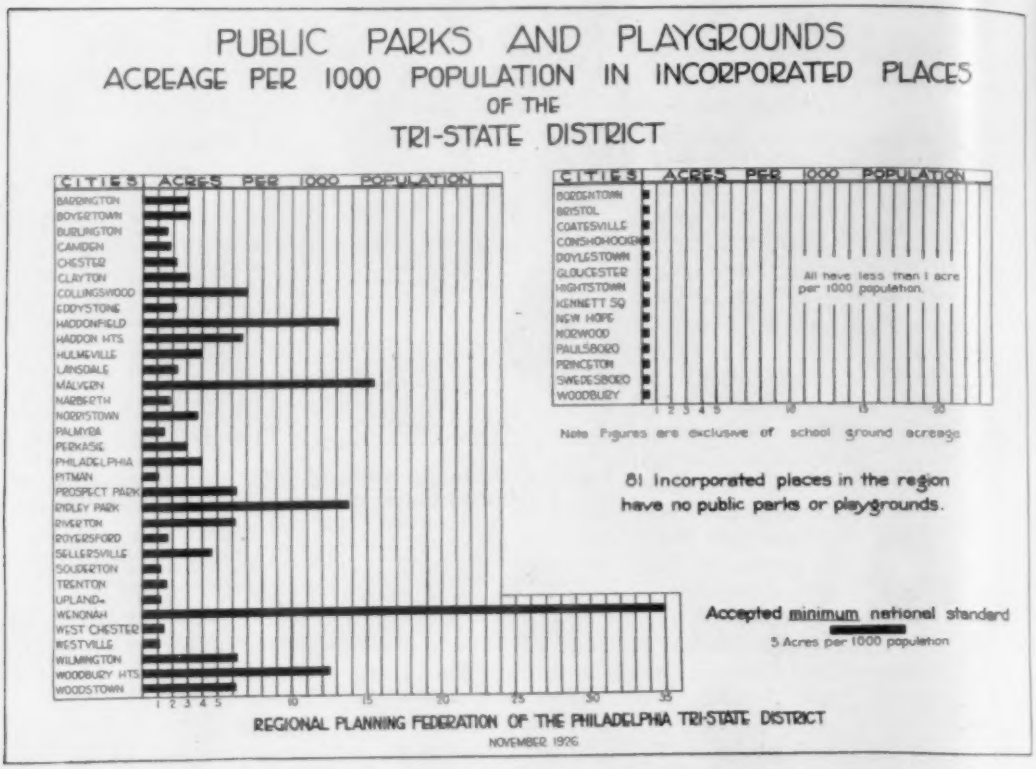
The Master Plan the Chief Effort

The chief effort of the regional planning body should be toward a comprehensive master plan, to be begun as soon as the basic conditions have been discovered, mapped, and analyzed. But incidentally, attention must be given to the more pressing, even though somewhat isolated, problems which cannot wait for the working-out of the whole plan, and also to such miscellaneous projects as may serve to arouse public interest and to demonstrate the function and the working of a regional plan.

The regional planning study, neither in whole nor in part, should duplicate studies being made by other agencies, but should rather take the studies made by such agencies where existing, tie them in with one another, develop them, and weave them into the major plan when they do not conflict with its broader interests.

Throughout the entire effort and all the engineering studies and their presentation it must be borne in mind that, as said at the beginning, the effectiveness of the whole thing depends upon the extent to which public support can be gained and upon the degree to which a spirit of cooperation among the governmental units involved can be developed.

And throughout it all there must be held in mind the goal of regional planning. It may be well to think of regional planning as an antidote for elephantiasis in city growth—an agency to encourage the uniform development of a whole region rather than the limitless growth of a single city at the expense of the region. Regional planning is founded upon the idea that it is economically more sound, and equally in the interests of both the larger city and its outlying satellites, that the region be planned as a region—that the independent growth of outlying municipalities be encouraged and that intercommunication be developed between these outlying communities and throughout the region, as well as between these outlying communities and the central city. There is a limit beyond which a city cannot grow to advantage or manage its affairs efficiently and economically. There is much advantage in preserving local autonomy and individuality in the outlying communities of a region. Planning assures this condition by substituting cooperation for annexation in making public improvements.



RECREATION AREAS, PARKS AND PLAYGROUNDS IN THE PHILADELPHIA REGION

Regional planning is very materially concerned with the lifting of the planning standards of a district. One of the greatest concerns of the Philadelphia Regional Planning Federation, for instance, is the recreation deficiencies of the district. This diagram shows a few of the smaller cities of the region to have park and playground acreage well above a reasonable minimum, but shows all of the larger cities, except one, considerably below this standard, and more than half of the communities entirely devoid of such public grounds

The Goal of Regional Planning

The goal of regional planning, then, is a unified region with efficient and comfortable ways of getting from place to place, a region offering uniformly healthy living conditions and play and recreation space for every one of its citizens—young and old; a region which can be governed and maintained at a minimum cost because streets, highways, sewers, bridges, and railroads have all been placed where they will best serve their purpose and in right relation with one another. The goal of regional planning is not an endless maze of streets spread out over the land as one inefficient, unmanageable, unlivable city, but a group of many well-connected units of population, each with its own industries and business centers, each closely connected to every other by highways, railroads, and airways; all closely connected with the central city to which attention must be turned for certain social and business advantages which may not be had elsewhere; and all separated from one another and surrounded by farm land or parks and other areas which shall serve the recreational needs of the region.

Methods of Collecting Delinquent Paving Taxes in New York State

THE New York State Bureau of Municipal Information, Albany, N. Y., has issued a report under date of December 29, 1926, made up of replies from 41 cities of New York State to the question, "How does your city collect delinquent paving taxes?" Fourteen of the cities report that paving taxes are collected in the same way as general city taxes, various methods mentioned including sale of real or personal property, civil suits in court, and foreclosure. In the 27 other cities, in some of which, at least, the paving tax is treated somewhat differently from other taxes, the prevailing method of enforcing collecting was by sale of the real property concerned, this being so in 16 cases. Other methods were by civil suit (6 cases), foreclosure (6 cases), sale of personal property (3 cases). Sale of a tax lien was the method reported in one instance, while in two others it was merely stated that the tax became a lien on the premises, which lien could supposedly be sold or foreclosed. In one case it was merely stated that the tax was an assessment against the property; and in two cities no paving assessments were reported to the Bureau as being made.

Forward Steps

Reported by Municipal Officials, Chamber of Commerce Executives and Others

North Dakota's Capital City Codifies Its Ordinances

BISMARCK, N. DAK.—The ordinances of the city of Bismarck, prior to the revision of 1926, which became effective February 11, 1927, consisted of some 340 separate ordinances contained in four different books. In most cases the ordinances covering a subject had been amended and re-enacted so many times that it was practically impossible to find the law covering the subject. There had been no general revision since 1885. Sporadic attempts had been made prior to 1925 to revise the ordinances, but no adequate appropriation had ever been made. In 1925 and 1926 the City Commission appropriated $1,500 to cover the cost of clerical work and the printing of 250 copies of the revised code.

The work of revision was done by C. L. Young, City Attorney, with some assistance from the writer. Use was made of the article, "Codification of Municipal Ordinances," in the 1925 *Municipal Index*, and of the Topeka, Kans., and other compiled ordinances. All existing ordinances of the city were gone over carefully and the parts considered adequate were incorporated in the revision. It was found necessary in many cases to rewrite the ordinances covering the subject, and in other cases to prepare ordinances covering new subject matter.

The ordinances as revised consist of a paper-bound book of some 234 pages, containing a table of contents, a general statement as to the scope of the work, a list of cases in which the city has been a party, the code proper, and a complete alphabetical index by subjects. The code proper is divided into the following main parts: Administration, Public Works, Public Utilities, Building Regulations, Health and Sanitation, Public Welfare, City Planning, Business and Trades, Public Morals, Public Safety, and Weights and Measures.

It is believed that this revision is the latest and most complete one in effect in any North Dakota city. Acknowledgment should be made to THE AMERICAN CITY, the secretaries of several state leagues of municipalities, and the city officials of several cities, for assistance given in obtaining similar codes and advice as to procedure to be followed.

M. H. ATKINSON,
City Auditor.

Yellow Pavement Markings on Crosswalks to Supplement "Stop" Signs at Through Streets

MILWAUKEE, WIS.—So that motorists will stop without blocking pedestrian traffic, on arterial highways, the city of Milwaukee has decided to supplement arterial highway signs on intersecting streets with yellow lines painted on the pavement even with the inside edge of the sidewalk, indicating a crosswalk. This street marking was to follow promptly the disappearance of snow from the streets, according to R. E. Stoelting, Commissioner of Public Works.

In downtown sections especially, the habit of certain automobile drivers of not stopping their machines until they are halfway across the crosswalk, made drastic action necessary, according to Alderman Henry J. Gottschalk, author of the resolution which passed the Common Council. The ordinance provides:

> "That the Commissioner of Public Works be and hereby is authorized and directed to mark the crosswalks at all arterial highway crossings, including highways created by city ordinance as well as those established by authority of state law, said crosswalks to be plainly marked by drawing a straight line on the pavement at the inside line of such crosswalks, said markings to be in addition to arterial highway signs already at said arterial highway crossings, and it shall be unlawful for any person driving or operating a vehicle, whether propelled by animal or any other power, upon the public streets or alleys of the city of Milwaukee, to drive or cause the same to be driven across such crossing markings without first coming to a complete or full stop."

Yellow was chosen for this marking because of its great visibility at night.

Although the 1927 appropriation for this street-marking work is not large enough to permit marking the crosswalks at all intersections with arterial highways in Milwaukee, the main intersections will be so marked.

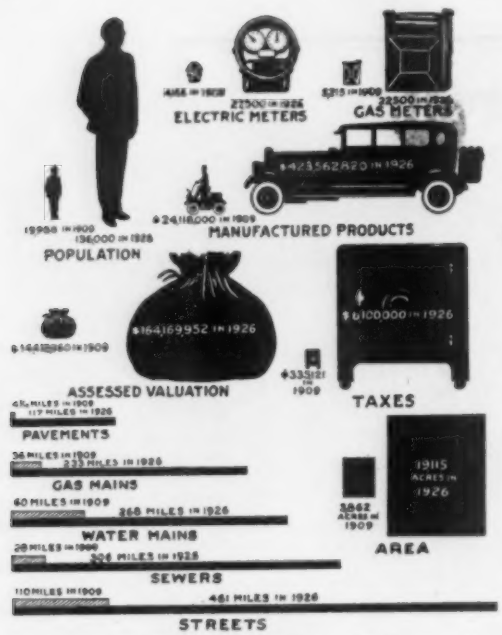
It was also decided that the Public Works Department would be better able to take care of street-marking work than the Police Department, which had been doing the work up to this time. The ordinance therefore provides that "all street-marking work heretofore performed by the Police Department for the guidance of motorists and for parking of motor cars, be and the same is hereby placed under the direction and control of the Commissioner of Public Works of the city of Milwaukee."

P. W. KOEPPEN.

A Graphic Method of Showing a City's Development

FLINT, MICH.—Data compiled by the Chamber of Commerce and other agencies in Flint, for W. T. Ward, field representative of the United States Treasury, who was assigned by the Government to study the city's need of a new Post Office, have been given graphic form in a chart published in the *Flint Daily Journal* and here reproduced. For comparison with the 1926 figures the year 1909 was selected because that was the date of erection of the present outgrown Post Office.

In the tremendous development of the city during the last seven years, the city plan prepared by John Nolen and Bion J. Arnold has been an important factor. On this subject former Mayor



FLINT IN 1909 AND IN 1926

George C. Kellar said in a recent report to the Chamber of Commerce:

"As I was mayor at the time the city plan was prepared and adopted, I might say that the value of this plan cannot be estimated in terms of finance. It brought order out of chaos. Before this plan was a part of the directing influence of Flint's growth, our city was developing along chaotic lines. Since its adoption our growth has been symmetrical and along well-defined lines of practical city planning. The plan has been adhered to very religiously since its adoption in 1919 by the City Council."

The development of a civic center was one of the principal recommendations included in the plan, and it is on this proposed site that it is hoped the new Federal Building can be erected.

As a step towards the civic center idea, the city already has bought all of the land on the east side of Beach Street, between Second and Third Streets, with the exception of the First Baptist church property. The City Hall in its present location practically fits into the picture, as it would be immediately behind any new public buildings which might be erected. The civic center plan calls for a new municipal administration building, a new public library, and other structures of a public or semi-public nature, such as churches, clubs, theaters and hotels.

PARKS AND HOUSING

A notable feature of Flint's civic development, not shown in the chart, is the expansion of the park system.

The city plan of 1919 suggested definite lines for the parks of the future to follow, and the Board of Park Commissioners has adhered closely to the plan in the acquirement of new lands for recreational and artistic purposes.

Although much of the city's park system is still in the process of development, the results of scientific foresight are already beginning to show a pleasing effect.

The following table will show clearly the increase in the number of parks, the sums invested and spent yearly, and the number of persons taking advantage of the facilities offered:

	1909	1926
Number of parks	4.	40.
Miles of boulevards	0.5	11.
Park and boulevard acreage	30.06	1,140.88
Value of park property	$24,025.00	$2,750,000.00
Park budget	$11,500.00	164,223.00
Number of—		
Golf courses	0.	2.
Community buildings	0.	2.
Swimming pools	0.	5.
Supervised playgrounds	0.	7.
Athletic fields	1.	8.
Tennis courts	0.	10.
Number using—		
Swartz Creek golf course		27,300.
Mott Park golf course		25,331.
Berston Community B'lding		185,805.
Haskell Community B'lding		50,146.
Swimming pools		233,109.
Supervised playgrounds		176,132.
Six free athletic fields		21,000.
Tennis courts		3,800.
Number of local baseball clubs	0	42.

Another activity which is being given special emphasis by the Chamber of Commerce is the work of its Citizens Committee on Flint Home and Civic Development. This aims at providing adequate housing facilities for the thousands of new workers being brought to the city as the result of expansions in General Motors plants and the bringing of a Fisher Body plant to the city which will employ from 8,000 to 10,000 men when in full operation. The committee, made up of fifteen subcommittees, covers every phase of city development from plat layout, promotion of building by individuals and on large scale by organizations, to publicity, finance, and securing of necessary utilities. A minimum of 8,000 new homes for Flint within a two-year period was set as the mark when the committee organized last fall. During the calendar year of 1926 a total of 2,035 single-family dwellings were built. During 1927 the first three months have shown permits issued for three times as many houses as were issued during the same time a year ago, and 1926 set a high record for Flint.

Flint has also a well-equipped tourist camp in a 100-acre tract drawing thousands yearly.

C. W. OTTO,
Manager, Flint Chamber of Commerce.

Chamber of Commerce Stimulates Organization of Taxpayers' Association

FALL RIVER, MASS.—A demand for a return to reasonable expenditures and proper methods of taxation by the Fall River city government has resulted in the organization of the Fall River Taxpayers' Association. With the change in the administration, the opportunity for accomplishing something in this direction was immediately recognized. The Fall River Chamber of Commerce, through its President, called a meeting to consider the matter. Those invited were two merchants' associations, the Clearing House Association, the Real Estate Board, the Real Estate Owners' Association, the Cotton Manufacturers Association, the Central Labor Union, the Textile Council, which is made up of workers in the textile mills of Fall River, and the cooperative and savings banks. As a result of this meeting, which was representative of taxpayers of all kinds and degrees, a committee of five was named to provide

ways and means. These quickly crystallized a decision, which was unanimously adopted by the representatives of all the organizations, to organize a taxpayers' association and employ a consultant to work in conjunction with the city government. The city government, recognizing the necessities of the case, quickly accepted the cooperation offered, and work was immediately begun in preparing the budget.

The form of the budget was revised to correspond with the standard form set up by the state. All estimates submitted by the departments were carefully gone over and revamped to fit into the new form of budget, and cuts were made after consideration of the needs of the respective departments. These cuts totaled some hundreds of thousands of dollars and there was a reduction in the complete budget for the first time in a considerable period. The custom had been to introduce a preliminary budget and then supplement it from time to time as the year ran along. For the first time in years the city government begins its fiscal year with a fair knowledge of what its needs are and how they will be met.

The Taxpayers' Association is financed by a number of important taxpayers who are contributing to a fund to be carried through three years, amounting to one per cent of the taxes paid for the previous year. Out of the amount to be raised will be paid the expenses of the maintenance of a staff of trained men working in conjunction with the city government.

A number of cities in New England are considering this method of meeting their tax situations and thus promoting the industrial development of the region. The subject was thoroughly discussed at the January meeting of the New England Association of Commercial Executives in an able paper presented by Philip Nichols of Boston, one of the leading tax lawyers in New England. This paper has been distributed by the New England Association to every important Chamber of Commerce in New England.

HERBERT F. SHERWOOD,
Manager, Fall River Chamber of Commerce.

This Library Finds Good Use for Window-Sills

CINCINNATI, OHIO.—The Public Library in Cincinnati is enhancing greatly its service to the public at large through nothing more costly, elaborate or difficult than employing for display purposes the broad window-sills with which public buildings generally are equipped.

At a minimum cost the library has had built simple wind- and rain- and snow-proof display cases, exactly fitting each of its ground-floor sills. The exterior of these cases has its millwork painted of a hue not to show the dust, and to harmonize attractively with the building itself.

The interior of the case is whitewashed, to show to best advantage the display within.

The rear wall of the case drops back, and the cases are filled or emptied by raising the window at their rear, and "trimming" then from the room inside. Simple electric lighting in the roof of each display case floods it with all light needed until late at night.

The contents of the cases are changed at least weekly; and oftener, as public interest demands. Sometimes they are allotted, one to interest the men who go by; one, the women; one, the children; and one the folk of every age.

BOOK DISPLAY ON WINDOW-SILL OF CINCINNATI PUBLIC LIBRARY

This is not a hard-and-fast rule, however; the primary purpose is to make things interesting and timely.

FELIX KOCH.

A Unique Referendum on Sunday Motion Pictures

FITCHBURG, MASS.—Deluged with protests and clamors for and against Sunday motion pictures in this city, Mayor Joseph A. Lowe has held a unique referendum to ascertain the desires of the citizens on the matter.

When he assumed office, on January 4, Mayor Lowe was barraged with protests by ministers and church organizations against allowing the movie theater to open on Sunday. He decided to stage a postal-card referendum at his own expense, saying that he would abide by the wishes of the people. The card was worded as follows:

February 7, 1927.

Fellow Citizen:

Our State law allows Movies in Fitchburg censored by the State and subject to the Mayor's approval and restrictions. While the responsibility of granting or withholding these permits rests with me, I feel that the decision as to whether or not such permits should be granted should be determined by the voters. If the majority vote for Sunday Movies, I shall grant the necessary permits. If the majority vote against Sunday Movies, I shall decline to grant further permits.

The Chamber of Commerce have kindly consented to receive and count the ballots. Please mark the attached card and mail it not later than Wednesday, February 23rd.

Respectfully yours,
JOSEPH A. LOWE, Mayor.

It is significant of the interest taken in the question that out of 14,414 ballots mailed, 12,179 were used and mailed back. Officials of the Fitchburg Chamber of Commerce handled the details of mailing and counting the ballots. The referendum resulted in 7,800 people voting "Yes" and 4,363 voting "No." Managers and owners of local theaters did not conduct an active campaign prior to the closing date for voting, other than to use newspaper space to urge all citizens to vote whether their vote was to be cast for or against.

On determining the result of the vote, Mayor Lowe informed all lessees, owners, and operators of Fitchburg theaters that in the future, Sunday

motion picture shows would be allowed to operate from 8 p. m. to the usual closing hour, about 10 o'clock, provided state sanction was obtained in the usual way and payment of a $25 fee per concert was made, the latter to be devoted to purposes of the Board of Public Welfare for relief of the city poor. Prior to this, for the previous three months when Sunday shows made their advent in Fitchburg, it had been the custom for the theaters to announce the entertainments to be for the benefit of various local organizations to the extent of 20 per cent or more of the gross proceeds.

State licenses cost the Sunday promoters $2 each show, and city licenses $2, and now the $25 flat rate for the relief will make the cost of each entertainment for licenses, $29.

ERNEST A. STOLBA,
Assistant City Clerk.

Fine Structures Now Stand Where Mountains Once Stood

ASHEVILLE, N. C.—In the heart of the business district of Asheville, a new arcade building is being erected at a cost of nearly $2,000,000 on part of a level site where Battery Park Mountain once stood. This eminence, which was found to be an impediment in the city's path of progress, has gradually disappeared during the last few years under an onslaught of steam-shovels and dynamite. The excavation project was financed by the property owners, the E. W. Grove Company, at a cost of more than $550,000.

As fast as the earth was excavated, a constant stream of dump-wagons hauled the earth to a deep gulch about five or six blocks away. This hollow was gradually filled and by the time the excavation was complete a new street had been graded and paved through a promising new business section created by this filling process.

The old Battery Park Hotel, which had crowned the landmark for many years, remained open for some months after the digging was commenced, receiving guests until the destruction of the building was imperative. Meanwhile, the foundation for a new Battery Park Hotel was laid on the newly excavated area to the north of the old structure, and this building was opened to guests in 1924. The leveling of the remaining area was completed shortly thereafter. The following year the entire block in front of the new hotel was dug to a considerable depth in preparation for the erection of the Grove Arcade Building. The earth removed from this area, which is about the width of an average city block but much longer, was used to fill other ravines and depressions elsewhere in the city.

In the latter part of 1926 the actual construction of the Arcade Building was begun. It is expected to reach completion within the next few months, and will be one of the finest additions in recent years to the commercial structures of the city. The main portion of the building, as shown by the architect's drawing reproduced in the accompanying cut, will be four stories in height, and ultimate plans call for a central tower-like structure which will furnish office space for renting purposes. The lower floors will house retail shops and display rooms. The roof of the four-story section will be converted into a large roof-garden for band concerts and other events of city-wide interest.

Since the destruction of the Battery Park Mountain, other firms have followed the lead of the E. W. Grove Company. In the Buxton Hills region, one of the business districts of the city, excavations were begun on a series of hills which had long obstructed business development in that section. The property thus improved was greatly enhanced in value.

The removal of these cumbersome hills will contribute a great deal to the commercial future of the city. The business district, formerly cramped by the unfavorable contour of the hilly site on which this section of the city is built, is now spreading over the newly created building territory.

JOHN DEWEY TOPPING,
Publicity Secretary, Asheville Chamber of Commerce.

A MOUNTAIN GIVES PLACE TO MODERN BUILDINGS IN THE BUSINESS DISTRICT OF ASHEVILLE, NORTH CAROLINA

At the top is a view of the old Battery Park Hotel and of the steam shovels as the work of excavation began. Next below is shown the Grove Arcade Building from the architect's drawing of the finished building. The tower is a secondary project and will be added to the structure later. The passing of the Battery Park Mountain is pictured in the third photograph. The space where this hillock stands is now occupied by the Arcade Building in construction, and other portions of the terrain, in the foreground, are now under the paving of finished streets

Engineering Skill, Spurred by Legal Action, Eliminates Odor Nuisance

TROY, N. Y.—Eighteen months of litigation which sought to eliminate noxious odors from the plant of the Hudson Valley Coke and Products Company in South Troy came to a close on March 30, when Justice Ellis J. Staley at a special term of the New York Supreme Court, in Albany, ruled that there no longer existed the public nuisance complained of by the Troy Corporation Counsel in his petition for a temporary injunction against the industry.

On June 16, 1926, eight months after production had started at the plant, a public hearing of complaints against the company was called by the Common Council Law Committee. Before a crowd of 1,200 citizens the company's representatives pledged betterment of conditions. The protest of the citizens was so urgently voiced that the Common Council ordered the Commissioner of Public Safety to begin action against the coke company unless immediate relief was obtained.

Two injunction applications were made by the Corporation Counsel, who also filed information with the Police Magistrate to secure a warrant charging maintenance of a public nuisance within the city limits. The Magistrate, after a hearing, declared that a nuisance had been shown to exist, but the Grand Jury failed to indict.

Hundreds of affidavits from Trojan citizens residing near the coke plant submitted to the first Supreme Court hearing brought announcement from Justice Staley that he was convinced the odors constituted a nuisance. The affidavit of the Troy Commissioner of Public Safety told of the receipt of scores of individual complaints and a petition bearing 600 signatures from a community organization in South Troy asking relief.

Attorneys for the company filed reply affidavits and pointed to the investment in the plant and to the public utility service performed. From the new Troy industry that city, Albany, Schenectady, and all communities within a 25-mile radius received gas for domestic and industrial fuel purposes, and fuel coke was supplied to a far greater area. The Court took the attitude in all the hearings that the odors should be eradicated if possible without closing the plant. The latter, representing an investment of seven millions, was founded by operators of the Burden Iron Company of Troy, one of the nation's oldest foundries. Armor plate for the U. S. Monitor was made in its plant when that vessel was girded for battle with the Confederate Merrimac.

Dr. Frederick W. Schwartz, of the chemistry department of Rensselaer Polytechnic Institute, of Troy, was retained as an expert by the city, and made several recommendations as to the elimination of the odors, but these the company alleged to be too costly or impracticable. The company then announced that it had discovered that pyridine odors were released when a tar extractor became fouled with sediment. New tar extractors were ordered by the Court. They were installed on January 20, 1927, and at the final hearing on March 30 the Court held that the situation was sufficiently relieved. Unless there is a recurrence of the odors the city will not carry the matter further.

ALTON T. SLITER.

Regulations Covering Theaters, Moving-Picture Shows and Other Amusement Places

NEW HAVEN, CONN.—For the enforcement of the statutes of the state of Connecticut and the ordinances of the city of New Haven relating to places of amusement, the following regulations have been promulgated by our Board of Police Commissioners:

No indecent, blasphemous, lewd or vulgar performances, act or picture will be permitted.

All performances shall be confined entirely to the stage of the theaters or place of amusement, and no runways or parade in the aisles will be permitted, and no performer will be permitted to leave the stage and mingle with the audience either in aisles or in boxes. Exceptions to this rule will be permitted only by written permission of the Chief of Police.

No performer shall appear in bare feet, bare breasts, or bare legs, except when special permit has been granted by the Chief of Police.

No suggestive muscle dances will be permitted.

No portrayal by performers of either sex of a dope or narcotic addict, wherein the act of hypodermic injection, the inhaling or eating of narcotics intended to show its effect upon a human being, will be permitted.

All gestures, dialogues, monologues, songs, language or conversation must be moral and decent and free from a double meaning that is obscene and lascivious.

PHILIP T. SMITH,
Chief of Police.

National Chamber Warns Against Unwise Scramble for Factories

A word of caution for cities engaging in the scramble for industries is sounded by the Organization Service of the Chamber of Commerce of the United States. It draws the line between enlargement by substantial growth and enlargement by inflation and reiterates the warning that there is no virtue in mere bigness.

As a pattern for local chambers of commerce in this respect it points to the policy of the Chamber of Commerce of Roanoke, which declared its purpose "to invite and encourage all legitimate enterprises for which our location and our resources appear favorable, and which promise a profitable return on the investment, and a steady growth in the future, and bring to us men and women who will be good citizens and help build our city and section to its logical position in industrial, educational, financial and cultural attainments. We have no intention of encouraging or soliciting the establishment of any industry or business that is not suited to our location, facilities, resources, climate and environment, and if it is clearly apparent that the business and personnel will not be prosperous and happy in our community."

Are You Proud Of Your Lawns?

Beautiful, well-kept lawns are well worth while. Not only do they advertise your community as up-to-date, but they arouse civic pride . . . create boosters of your citizens. Therefore, it pays to maintain your lawns and parkways in apple-pie order. And at the minimum of expense, of course.

Actual tests have proved that the Coldwell Model "L" motor lawn mower and roller provides a new degree of efficient and economical performance. That's why it is used by cities and towns everywhere. With gang units attached Model "L" cuts a swath of 60 inches. The units may be detached in a moment, leaving a light flexible machine for trimming, clean along walks, borders, close up to and around shrubbery and trees.

Coldwell Model "L" gives trouble-free service day-in and day-out throughout the years.

Get a demonstration of Model "L" on your own grounds. See how perfectly it meets your requirements. Note how cleanly and evenly it cuts. Never tears or crushes the turf. Write today for demonstration. Interesting literature will be sent on request.

Coldwell Dependable Hand Mowers

Above:—"Biltmore"—recognized as the finest hand mower ever built, bar none! From its bottom knife of finest crucible steel to its natural maple handle, it's built for performance and permanence.

Timkin Roller Bearings, self-oiling. Five keen blades of hardened crucible steel. Malleable hangers and flanges. All shafting of cold rolled steel. Write for booklet, "Care of the Lawn."

HAND — HORSE

SINCE 1881

COLDWELL

GASOLINE — ELECTRIC

DEPENDABLE LAWN *MOWERS*

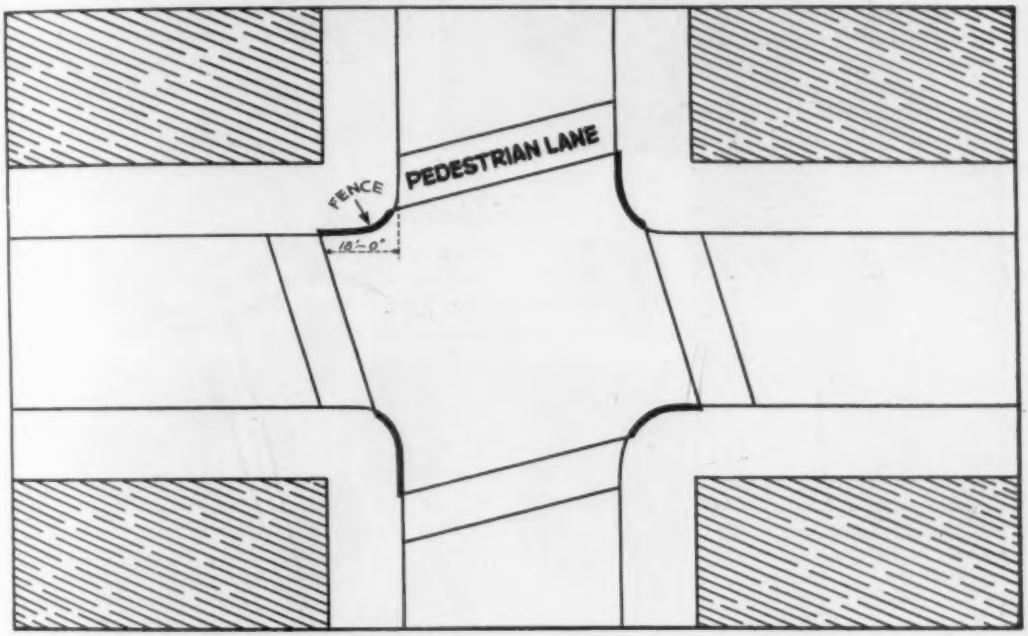
COLDWELL LAWN MOWER CO.,
NEWBURGH, N. Y., U. S. A.

Do you mention THE AMERICAN CITY when writing? Please do.

A New Plan for Crosswalks Proposed

AT the annual meeting of the National Highway Traffic Association, held in New York April 15, Jay E. Thompson, Director of the Toledo (Ohio) Safety Council, suggested an idea which it is hoped may soon be tried out in a number of cities.

It is proposed that crosswalks at busy intersections be so arranged that pedestrians will be protected from right-turn vehicles and that right-turn vehicles will be provided with a clear space in which to turn, thus reducing interference with traffic which is passing in their rear. The plan proposed, as shown in the accompanying diagram, involves three special features:



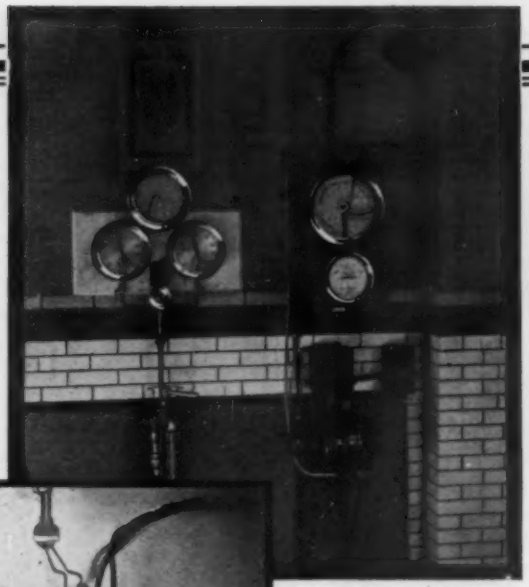
1. The distance from curb line to pedestrian crosswalks will be increased to 18 feet where right-turn vehicles complete their turn. The setback of crosswalks will give pedestrians, to that extent, protection from the right-turn vehicles, and will also give a clear space for right-turn vehicles to occupy, thus eliminating interference with the flow of traffic in the street from which they have turned.

2. The opposite end of the crosswalk is to remain as at present, being approximately 6 feet from the curb line, depending upon the radius of the curb corner. This will decrease the pedestrian detour, although it will increase the distance in crossing the roadway itself. Many times a pedestrian will be able to journey from one address to another over a shorter route with this plan and to that extent will be satisfied to accept this safety detour. This plan will also interfere the least with parking space.

3. A pipe fence properly illuminated at night should be erected, following along the curb from pedestrian lane to pedestrian lane. The fence will make easy the enforcement of this regulation, because it will be a physical barrier necessitating cooperation. Such fences are in common use by the railroads to protect employees emerging from doorways adjacent to railroad tracks by forcing them to detour to where they will have a vision of approaching traffic.

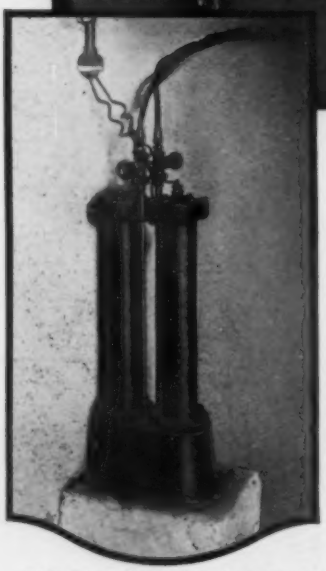
The driver of a right-turn vehicle is looking in the direction of danger to himself, which is to his left, while the pedestrian who is stepping into his path from the curb seldom looks to the left rear where the right-hand-turn vehicle is approaching. These two conditions make a blind spot in the street, which it is thought that this plan will eliminate, with the added advantage of providing a clear space for the right-hand-turn vehicle to occupy without pedestrian interference.

It is assumed that pedestrians will be guided by white lines on the pavement crossing from curb to curb over the route designated.



In A Filtration Plant

Water Meter on line of filter beds, Evansville Water Works, Evansville, Indiana



Meter body located underground outside the building, Evansville Water Works

IN filtration plants Republic Water Meters are used to measure the water passing through the filter beds. Thus the operator has a check on the amount of water filtered and a record of operation, giving exactly the time and amount of water used.

The Republic method of electrically measuring flow gives a flexibility of installation. That is, the reading instruments are placed any desired distance from the points of measurement. Many times, they are located in the engineer's office, where he can watch his pumping conditions at all times.

Variation of voltage in current supply does not affect the readings, owing to a patented feature developed exclusively for the Republic Flow Meter.

The oil seal absolutely prevents scale, dirt, oxide, boiler compound or other matter from entering the meter body.

Republic Flow Meters have the well-known accuracy of electrical instruments. The orifice will not wear and scale cannot accumulate on the thin edge; thus accuracy is maintained.

Bulletin "Republic Water Meters" sent on request.

Republic Flow Meters Co.

2226 Diversey Pkwy. Chicago, Illinois.

Some Achievements and Possibilities of Fire Prevention

By Franklin H. Wentworth

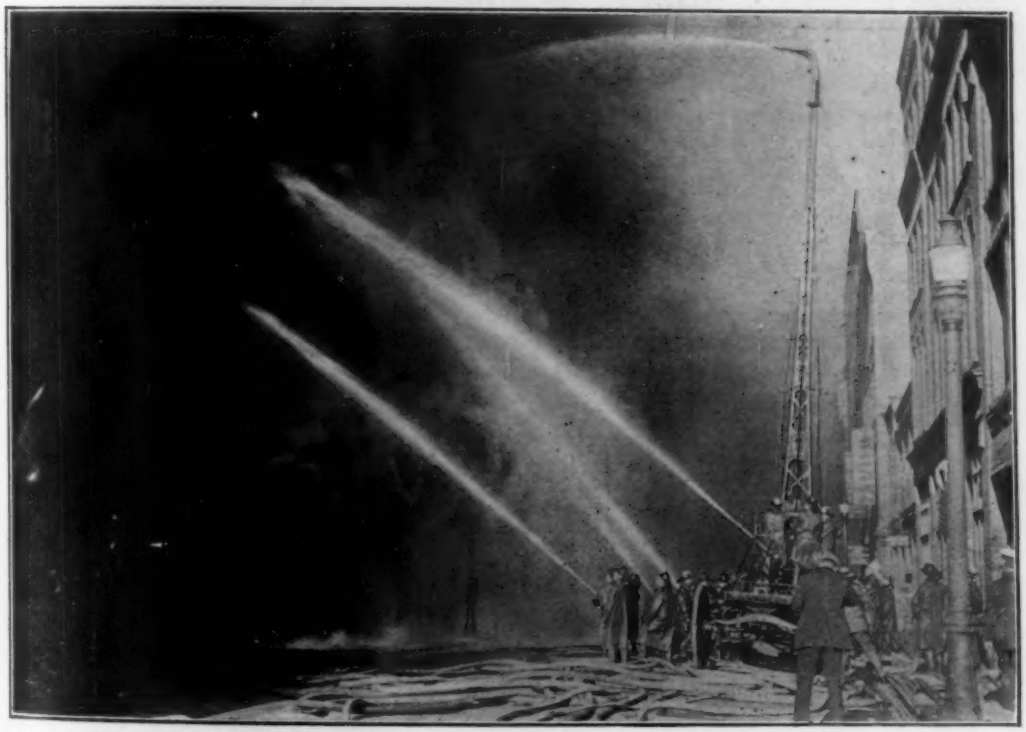
Secretary, National Fire Protection Association

THE American fire record in recent years yields two significant facts: first, the United States is paying an annual toll of 12,000 lives and more than $500,000,000 in property; second, the month of October has quite consistently shown lower losses than the other months since the observance of Fire Prevention Week has become established. The reported losses in the United States and Canada for October, 1926, of less than $15,000,000 made the lowest record for any month in seven years. This indicates that when the public takes the same precautions against fire all the year round that it takes in October, under the stimulus of Fire Prevention Week, the fire waste will decline. In short, the vast majority of fires are preventable and when the people want to stop them they can.

The history of fire prevention in America is the story of a constant struggle against national callousness to the loss of human life and destruction of property by fire. Since the World War the United States has sacrificed more lives through fires than in the War itself. And an invading army that succeeded in blowing up every building in every college and university in the land would inflict no greater damage than fire does every fifteen months. It would be difficult in history to find a parallel to such recklessness.

Educational and Technical Activities on a National Scale

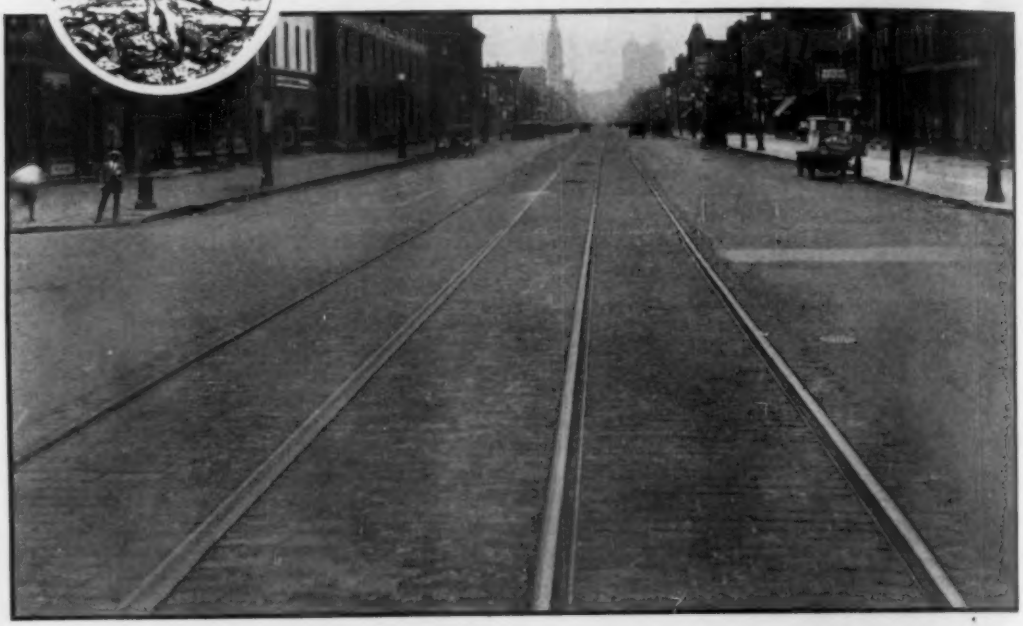
Against this colossal carelessness there was pitted at the turn of the last century the work of a few men, then gradually the efforts of a larger and larger group. The clearing-house for all fire protection activities today is the National Fire Protection Association, which includes in its membership, and on its active



THE $1,500,000 FIRE IN LOWELL, MASS., PAID FOR BY THE ENTIRE COUNTRY THROUGH THE DISTRIBUTING MEDIUM OF FIRE INSURANCE

One month before this picture was taken, field engineers of the National Fire Protection Association warned Lowell that this block was a fire hazard of the first order and suggested specific remedies

From Trinidad Lake to Buffalo, New York



Service! 23 years of it!

Such service as only Trinidad Native-Lake Asphalt can give! From 1904, when this pavement was laid on Broadway, from Spring Street to Herman Street, Buffalo, N. Y., it has demonstrated its long life and low maintenance cost, just as other Buffalo streets have been doing, some for as long as 46 years.

Trinidad Lake Asphalt being a product of nature possesses qualities which cannot be put into man-made artificially-produced asphalt—and in addition Trinidad is noted for its attractiveness, resiliency, ease of keeping clean and repairing, and freedom from noise.

We also supply Bermudez Road Asphalt—another native-lake product—for *road* building. Write for interesting data.

The Barber Asphalt Company

PHILADELPHIA

New York Chicago Pittsburgh St. Louis Kansas City San Francisco

TRINIDAD LAKE ASPHALT

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committees, the representatives of no less than 145 organizations interested in fire protection and 4,100 individuals who are public officials, architects, engineers and others interested in conservation. As the annual fire waste mounted, the work of the Association developed from scientific study of the problem and technical research to include educational activities on a national scale, and finally, in 1924, to embrace pioneer field work by skilled fire prevention engineers which has proved to be the outstanding step in the recent history of fire prevention. In a number of cities where this work was carried on, the per capita fire loss curve sharply declined.

Formulating Standards

On its technical side, fire prevention has been pushed by the formulating of standards under guidance of which fire waste may be checked. The technical committees of the National Fire Protection Association are made up of experts in their fields who have given their time voluntarily to the creation of these standards, and it is safe to say there is no public effort in the history of the nation to which there has been so freely given over so long a period so much of expert thought and painstaking technical investigation. Codes such as those now generally adopted for fire-safe building construction, electric wiring, storage of gas and oil, installation of automatic sprinklers, fire-escapes, etc., were developed. The codes, regulations, and ordinances originating with committees of the Association and now in use number over one hundred. Progress in science, invention, and industry makes constant revision of standards imperative, and this work is continued indefinitely.

The educational work carried on in America to bring about the general observance of these standards and point out the grievous economic penalties for ignoring them has been enormous in its scope. The National Fire Protection Association alone distributed 922,000 leaflets and posters last year, designed to inform the layman as to the essentials of fire prevention. Many organizations engage in similar popular work, and many more broadcast the more technical material. The work of the Chamber of Commerce of the United States in annually giving medals to local chambers in cities having the best fire records, and the service of the National Board of Underwriters in supplying speakers for luncheon clubs and other organizations are important factors in general public education. Fire Prevention Week is another. In the press, in the schools, by public speakers, the lesson has been taught, first, that fire adds tremendously to the cost of living, and second, how to stop it.

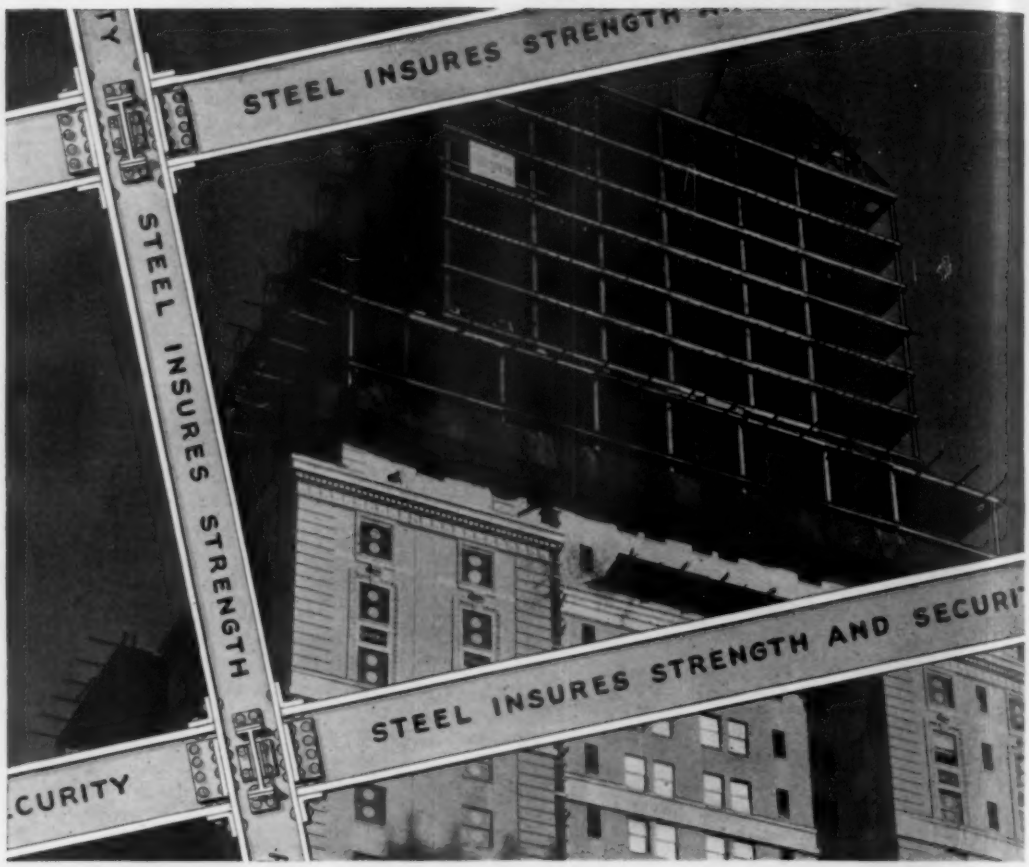
A Law-Enforcing Arm of International Influence

A striking development in this whole work came in 1926 with the decision of the Fire Marshals' Association of North America at its Memphis convention to unite with the National Fire Protection Association as a fire marshals' section. Thus the National Fire Protection Association was given a law-enforcing arm. Since practically all provincial fire marshals in Canada are members of the N. F. P. A. and will automatically become members of the new section, the group will be one of international influence. It will be further strengthened by the admission of city fire marshals. The significance of this move is that hereafter each law-enforcement officer will have the support of all members of the National Fire Protection Association in his state, a non-political group of diversified interest constituted to concern themselves with his problems. He will have the right to call on them to strengthen his policies and influence.

Revision of the arson laws is an immediate activity of the fire marshals' section. In most states loosely drawn statutes offer a convenient escape to incendiaries and have done so for a decade. Convictions are difficult and few. Influential members of the National Fire Protection Association, such as the National Association of Credit Men, the Railway Fire Protection Association, and others, are pledged to cooperation in urging the passage of a model statute. The legal department of the National Board of Fire Underwriters has made a useful contribution by preparing a digest of existing arson laws where new legislation is sought. As crooks do not organize, there should be no formidable opposition to the passage of this model statute, which has, at the current sessions, already passed in the Legislatures of New Hampshire, North Carolina, Delaware, West Virginia, and Indiana. Experience has proved that the chief impediment is likely to be public inertia.

A Nation-wide Campaign for $500,000

It is not the lack of scientific knowledge of how to check the fire waste, for that knowledge is abundant and available to all, but the difficulty in applying what is known that constitutes the vital problem of fire prevention. This is the reason why the field work of the National Fire Protection Association, initiated in 1924 to supplement its general educational activities, is of such significance that it has



BUILD BETTER---WITH STEEL

Nothing but Steel is good enough! The most dependable material: Steel! Only Steel will stand *any* shock! . . . These are headlines of advertising appearing as part of the extensive educational program now being carried on by the American Institute of Steel Construction. This advertising supplements the authoritative publications, counsel, and researches of the Institute.

Already the Institute's influence has been reflected in the adoption of its standard specification and the use of its Code of Practice in more than 100 important cities in the United States and Canada, with an estimated saving of $30,000,000 a year to owners and taxpayers. Send for your copy of the Specification, Code of Practice, and the illustrated fact-book of structural steel, "STEEL NEVER FAILS."

This advertisement is published by the American Institute of Steel Construction, a non-profit service organization of 218 members comprising the structural steel industry in the United States and Canada. Contributing also to the educational fund are these great rolling mills: Bethlehem Steel Company, The Colorado Fuel and Iron Company, Inland Steel Company, Jones & Laughlin Steel Corporation, Scullin Steel Company. The purpose of the Institute is to extend the use of structural steel in construction work of every size and type, from residences to skyscrapers and bridges. The Institute offers fullest cooperation with architects, engineers, the public and all branches of the building trades. Correspondence invited. Address: Lee H. Miller, M. Am. Soc. C. E. Chief Engineer, American Institute of Steel Construction, Inc., 285 Madison Avenue, New York City.

Do you mention THE AMERICAN CITY when writing? Please do.

now attracted the attention of some of the most prominent business men in the country, who have united, under the leadership of Irving T. Bush, in undertaking a nation-wide campaign to raise $500,000 for its development.

In a nutshell, the objective is to carry on a scientific and systematic attack on the fire scourge comparable to the scientific and systematic attack launched by medical science against such plagues as yellow fever or hookworm. The distribution of pamphlets is an essential part of the work, but it is not enough. Personal contact must be made with the fire prevention forces in every city through the agency of a skilled fire prevention engineer who has the requisite knowledge to marshal, concentrate, and encourage these forces after a survey of the local situation has supplied him with a practical program of procedure.

Since 1924 the Association has sent two such engineers to more than 80 cities, where they lent a helping hand to local fire prevention agencies and civic organizations. Where necessary, they set the proper wheels in motion to bring results. In that brief period the saving can already be measured in hundreds of thousands of dollars. It has been fully demonstrated that organized effort will get results. Here is the record for ten cities which have demonstrated this:

PER CAPITA FIRE LOSS

City	1923	1924	1925	Per Cent Reduction Over 1923
Chelsea, Mass.	10.61	6.24	4.45	58.0
Concord, N. H.	11.14	4.91	4.90	56.0
Springfield, Mass.	6.14	2.82	2.76	55.1
Norfolk, Va.	4.91	3.04	2.52	48.7
Providence, R. I.	7.21	4.29	2.28	41.4
Utica, N. Y.	5.01	3.00	3.01	39.9
Grand Rapids, Mich.	8.03	6.90	4.98	38.0
Detroit, Mich.	3.99	3.17	3.16	20.8
Indianapolis, Ind.	4.23	3.47	3.38	20.1
St. Paul, Minn.	5.13	4.99	4.16	18.9

The per capita loss for the United States in 1925 averaged $4.94.

The success of this work has created such an insistent demand for it as to result in the movement to raise a national fund to finance the operation of ten field engineers for the next five years. The National Fire Protection Association, non-commercial, non-profit-making, without endowment, has no funds for that purpose. The recognition by representative American business leaders of the fact that fire, like a disease plague, can and must be stopped is a striking advance in itself. On the sound basis of past performance it can be predicted that $500,000 properly expended at this time will save thousands of lives and hundreds of millions of dollars within five years. It will be an eventful day in American history when we can finally say that for the first time the rising curve of our fire waste has taken a downward turn.

American Fire Losses for the Year 1925

THE following tabulation of the National Board of Fire Underwriters shows the estimated fire losses in the United States for the year 1925, classified as strictly preventable and partly preventable. Similar statistics for each of the 48 states are obtainable from the New York headquarters of the National Board, 85 John Street.

STRICTLY PREVENTABLE CAUSES	
Defective chimneys and flues	$ 21,673,853
Fireworks, firecrackers, etc.	829,613
Gas, natural and artificial	3,158,112
Hot ashes and coals, open fires	6,407,124
Ignition of hot grease, oil, tar, wax, asphalt, etc.	1,751,022
Matches—smoking	30,303,815
Open lights	3,100,290
Petroleum and its products	12,721,548
Rubbish and litter	1,575,835
Sparks on roofs	14,680,187
Steam and hot water pipes	371,053
Stoves, furnaces, boilers and their pipes	20,416,785

PARTLY PREVENTABLE CAUSES	
Electricity	$ 15,168,864
Explosions	2,639,555
Exposure (including conflagrations)	61,392,814
Sparks from machinery	7,507,516
Incendiarism	2,062,221
Lightning	13,196,918
Miscellaneous known causes	4,177,717
Sparks from combustion	7,827,414
Spontaneous combustion	17,391,398
Unknown causes (probably preventable)	199,179,533
Total	$447,543,087
25% to cover unreported losses	111,885,771
Grand Total	$559,429,858

The corresponding grand totals for the three preceding years were $549,062,124 in 1924, $535,372,782 in 1923, and $506,541,001 in 1922. The details as to the different kinds of losses for these years were published in the 1926 edition of THE MUNICIPAL INDEX, page 141, in the 1925 edition, page 73, and in the 1924 edition, page 39.

No More Wooden Roofs for New York

AN amendment to the Building Code of the city of New York, approved by the Mayor January 24, 1927, provides that:

"1. Any roofing hereafter placed on any buildings within the city of New York shall be of approved fire-retarding or incombustible materials.

"2. Any wooden shingle roof of a building now existing and situated within the city of New York may be repaired at any time to an extent of not more than twenty-five per cent of its surface in any one year.

"3. Any roofing of a building now existing and situated within the city of New York shall on or before the first day of January, 1942, be replaced with roofing of approved fire-retarding or incombustible material."

© The D. T. E. Co., Inc., 1927

Reproduction from a painting made on the estate of Vice President Charles G. Dawes, Evanston, Illinois, by Frank Swift Chase

A $2,000,000.00 business in saving trees in 1926

Yet 70% of Davey clients paid less than $100 each

Among prominent persons and institutions served by the Davey Tree Experts are the following:

HERBERT L. SATTERLEE
COLGATE UNIVERSITY
MORRIS L. CLOTHIER
OHIO BELL TELEPHONE COMPANY
E. M. STATLER
BALTIMORE & OHIO RAILROAD COMPANY
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D•AVEY TREE EXPERTS

Yes—we should like you to mention THE AMERICAN CITY.

Items and Ideas

A "Peaceful" Election in America's Second City

"THANKS to precautions such as machine gun auto patrols of police, the presence of doubly armed patrolmen at every polling booth, extra squads in districts where gangsters and gunmen voted, and preparations for an immediate response to a call for National Guard troops, the reign of terror, which had been expected and predicted, was not apparent.

"There were minor disorders. Many calls for assistance were received at the office of the Commissioner of Elections, and at one polling place the screams of scared women were heard, while an appeal for aid was being made. . . . A few shots were fired and one ballot box containing 199 votes was stolen, but so far as election officials and police could learn there was no bloodshed. There were a few reports of violence, kidnapping and intimidation, but when all was over it appeared that no one was seriously hurt."

—Chicago's municipal election of April 5, 1927, as described in *The New York Times* the following day.

Economic Value of a Human Life

A RECENT bulletin issued by Homer N. Calver, Executive Secretary of the American Public Health Association, states that the Treasurer of the Association, Dr. Louis I. Dublin, has recently made some interesting computations of the value of a human life. These vary with the age and the income class to which the person belongs. Dr. Dublin's conservative estimates, which omit certain values that were difficult to calculate, are:

Value of an Individual	Family Income $2,500 per Year	Family Income $5,000 per Year
At birth	$9,333	$9,629
At 5 years	14,156	....
At 18 years	29,000	34,320
At 25 years	32,000	....
At 32 years	....	49,100
At 50 years	17,510	....

"These are figures," says Mr. Calver, "that health officers have been waiting for. With them they can establish a credit side to their ledgers which heretofore have shown only the expenditures from their appropriations. The life saving measured in dollars and cents makes an interesting comparison with the money expended to effect these savings.

"Few, if any, government departments can show a better return on the money they spend than the health department. The consultant service of the A.P.H.A. has helped many health officers to successfully present their appeal for greater support."

Importance of Examining Food Handlers Demonstrated in Newark

SINCE 1920, examinations of food handlers have been conducted in Newark, N. J., starting with restaurant employees and being gradually extended until at the present time grocers, confectioners, delicatessen-store workers, and milk handlers are examined. This work and its results are described in *Public Health Reports* for March 25, 1927, by Dr. M. James Fine, Director, Tuberculosis Division, Newark Department of Health. In concluding he says:

"As a protection for the health of the community, the examination of food handlers seems thoroughly justified in the light of the results of this study. The outstanding point in our work and investigation is that periodical examinations of food handlers by health department physicians are unquestionably worth while and important for the following general reasons:

"Such examinations prevent a great number of diseased individuals from handling food, either by detection at examination or by the deterrent effect in causing many to secure other work rather than risk such a detection.

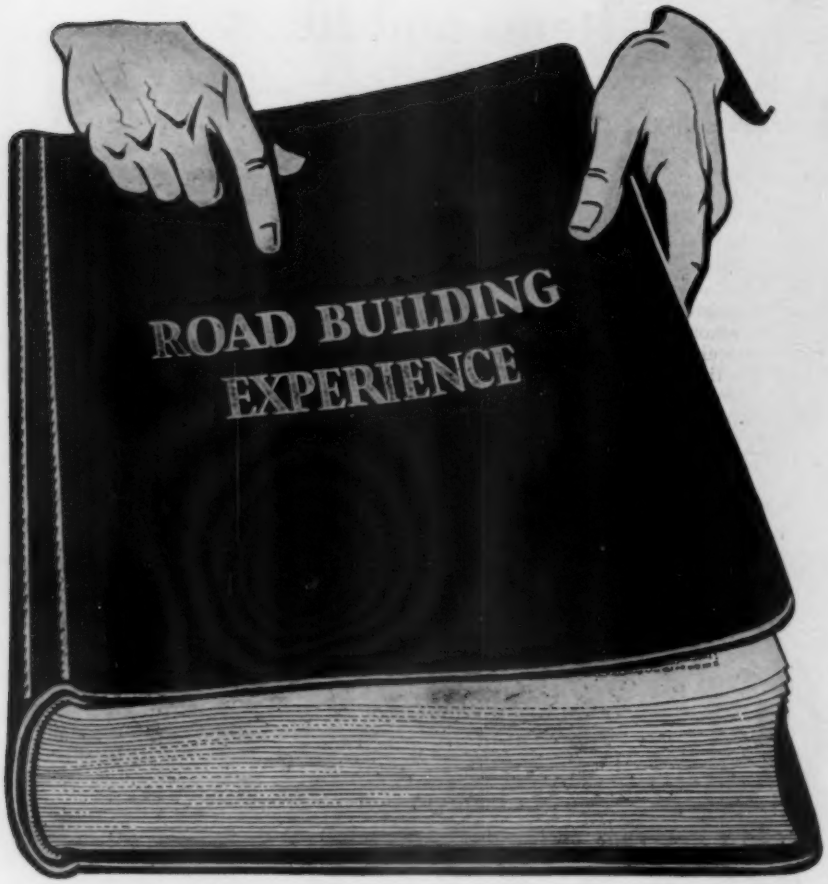
"The early discovery of a number of incipient cases of tuberculosis and subsequent treatment educate the public as to the value of periodical examinations.

"The examinations benefit physicians at large by relieving them of embarrassment in cases of private patients who might lose positions, and they send more patients to them for treatment, or, in many cases, for preliminary examination before visiting the health department."

Paving Between Car Tracks the Subject of Recent Local Decisions

A STRIKING contrast of views as to whether street railways should be relieved of the obligation to pave between their tracks is presented by recent actions of the Legislature of New Jersey and the voters of Detroit and Grand Rapids, Mich.

On March 22 the New Jersey Legislature passed, over Governor Moore's veto, Senate Bill No. 82, which relieves electric railways of a large part of their paving costs, making it no longer necessary for the companies to lay new paving between or around their tracks when the municipality paves the streets in which the tracks lie. The companies are required to restore pavement disturbed by them in the processes of construction, reconstruction, repair or removal of tracks; and also to repair damage caused by the operation of street cars to paving between tracks and within 18 inches beyond the outer track; but these are the only paving requirements and are in lieu of any previously existing obligations of the sort. The bill, which was similar to one defeated by the Governor's veto last year, was opposed by various officials and civic bodies, including the State League of Municipalities. The Board of Freeholders of Newark was particularly active and made use of paid newspaper advertisements in opposition to the proposal. The Board of Public Utility Commissioners had previously gone on record as favoring the principle of relief from paving obligations, as a factor in the consideration of rates of fare; and it was said that the paving bill in question was coupled with the preservation of the 5-cent unit fare idea on the lines of the Public Service Railway. The municipalities, however, faced by the necessity of raising more revenue to meet the paving obligations transferred to them, are hard hit, particularly as the Legislature, also over the Governor's veto, passed the bill which lifts the personal property tax on automobiles, imposed by many municipalities.



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At the election on April 4 in Detroit there was presented to the voters a proposed charter amendment which provided for transferring to the general tax roll the expense of paving, repaving, and watering between street-car tracks, now borne by the Department of Street Railways, which operates the municipal transportation system. The existing requirement was inherited from the former régime of private ownership. Notwithstanding the plea that car-track paving has little direct relation to electric traction and should be paid for by the general taxpayers along with other paving costs, thus relieving the car-riders from having to meet this expense, the measure was defeated by a large majority, the vote being 23,665 to 13,065.

In Grand Rapids, Mich., on March 7, a charter amendment was likewise presented at an election, its purpose being to relieve the Grand Rapids Railway, a private company, of a considerable part of the costs of paving between its tracks. This measure was defeated by a somewhat narrower margin than was the case in Detroit; 7,987 votes were cast, some 40 per cent being in favor of its passage.

The state of Utah has recently passed legislation that relieves street railways of paving obligations, excepting the restoration of paving that the railway disturbs in connection with track work. Connecticut, Massachusetts, and Montana have also lightened the requirements on street railways as to paving, according to the *Electric Railway Journal*, which also states that over fifty municipalities have granted such relief in whole or in part.

New York Civil Service Requirements for Fire Chiefs

A RECENT report of the New York State Bureau of Municipal Information, Albany, N. Y., shows for 49 cities, outside of New York City, the general character of requirements as to civil service examinations for chiefs of fire departments. In 17 of the cities this position is exempt; in another 17 it is the subject of competitive examination; and in the remaining 15 it is non-competitive. The last group includes Albany and Utica, where no one is eligible who is not a member of the fire department, of a relatively high grade.

Structural Steel Specifications in Building Codes

THE standard specification for the design and erection of structural steel, as formulated by the American Institute of Steel Construction, becomes a part of the St. Louis Building Code as the result of an ordinance recently passed by the City Council and signed by the Mayor. All designs for steel construction in St. Louis are being based upon the specification.

The Institute's specification is now in use in more than one hundred large cities in the United States and Canada. Substituting a working stress of 18,000 pounds per square inch for the old stress of 16,000 pounds, it is estimated that the application of the specification makes possible a saving of from 10 to 12 per cent in the amount of steel required. Among the cities which have recently authorized the use of the specification are Pittsburgh, San Francisco, Omaha, and Youngstown.

Effective Results from Volunteer Police Force in a Small Town

To the Editor of THE AMERICAN CITY:

Through my experience as a police marshal in Roseland, N. J., and through my contact with police officers and other officials of neighboring communities, I have come to the conclusion that police departments throughout the country are in need of some additional help from their communities in combating crime. In Roseland we have had in operation for the last three years a volunteer police system that has proved practical and that in my opinion might be adopted with profit in towns and cities of all sizes.

In this town we have no paid police force. We have instead a corps of volunteer police marshals, made up of six local merchants, whose duties are the same as those of any regular uniformed police in enforcing the law. We handle cases of all kinds, from the most trivial complaints to serious thefts and murders. Our Chief Marshal, who acts in the capacity of a chief of police, is paid a small sum for his services. Police marshals, or merchant police, as they might be called, are needed in every city and town—to take the place of regular police in small towns which are unable to maintain a paid uniformed force, and to constitute an extra guard against crime, supplementing the work of the paid police, in the larger communities. In large cities where the police department is divided into precincts, a group of volunteer merchant police might be assigned to each precinct.

In organizing a force of merchant police, it is important first of all to see that the men chosen are of high standing in their community. Any citizen wishing to volunteer for this service should be vouched for by, say, six responsible fellow citizens. After approval of the chief marshal, and by the chief of police or precinct captain where a regular police department exists, the volunteer's application should be passed upon by the mayor and council. After his qualifications have been duly approved, the applicant should then receive a gun permit, badge, blackjack, whistle, and call-box key, and be granted the privilege of using any private telephone in an emergency. It should be the duty of the volunteer to be on the alert at all times while on the street, for evidences of crime, and immediately to report any suspicious characters to his chief marshal. He need not be required to make daily reports or to receive any special training other than instructions in the use of a pistol and blackjack, and in the art of strong-arm holds, etc.

With such an organized body of private citizens constantly on the watch for violations of the law, crime would be substantially reduced without additional cost to the city government.

In time, if a number of cities throughout the country should adopt this plan of volunteer police, a national organization of merchant police might be formed, for the purpose of holding conventions and affording an opportunity for an interchange of ideas among the local groups.

WILLIAM W. LYONS.
Borough Marshal.

Roseland, N. J.

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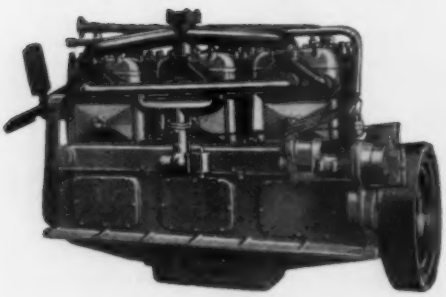
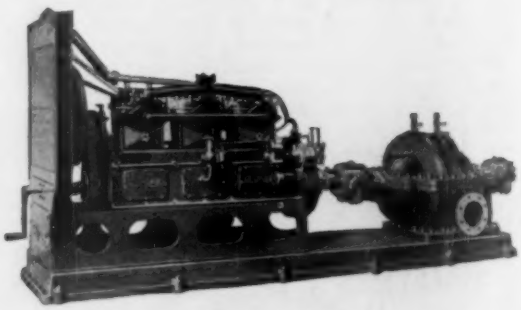


Climax Model R6U

Six-Cylinder, 6"x7" Engine, equipped complete to Underwriters' Laboratories' requirements.



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Model R6U with radiator mounted on cast iron side rails with extended sub-base to which pump is bolted.

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Birmingham, Ala.: Keiser-Geismer Engineering Co., 1306 American Trust Bldg.
Denver, Col.: The Hendrie & Bolthoff Mfg. & Supply Co., 1621-39 17th St.
Portland, Ore.: J. L. Latture Equipment Co., 364 Belmont St.
St. Louis, Mo.: Reeves & Skinner, 2211 Olive St.
Indianapolis, Ind.: Carl Dunning Supply Co., 204 W. Maryland St.

New Orleans, La.: Woodward, Wight & Co., 451 Howard St.
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Louisville, Ky.: Belknap Hardware Co., 100 East Main St.
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Salt Lake City, Utah: Lund & Co., 419 Dooly Block

Municipal Accounting and Finance

Conducted by Francis Oakey, C. P. A.

Member of the Firm of Searle, Oakey & Miller, New York

Appropriations

EXPENDITURE of public funds in accordance with the will of the people is one of the main principles upon which government in the United States is founded. In order to achieve this end, the power to authorize expenditure has been universally vested in the legislative body (national, state, or local) by constitutional provisions that no money may be drawn from the treasury except in consequence of appropriations made by law.

In this delegation of the sovereign power, the obvious intent is to insure that government revenues shall be spent in accordance with the will of those who provide them. And yet we find many provisions of law which violate this principle by the establishment of special funds of a permanent character for the support of activities to which it has been desired to give preferment. By such laws specific revenues are set aside or special taxes are assessed for designated purposes so that the power of the legislative body to appropriate in accordance with popular will is permanently restricted. Thus the present generation, without its consent, pays for the support of certain activities because they were highly favored by a former generation now dead.

Of course, it is possible to abolish or to amend laws which thus restrict the freedom of the legislative body in its power of appropriation. But, in the case of cities, such action often requires an amendment of the charter or the repeal of a special statute, which is not always easy to accomplish. There are many special funds, such as park funds, library funds, and school funds, which permanently restrict the revenues without the consent of the people. There are, also, sinking-funds established by setting aside specified revenues, of which the amounts collected have no possible relation to the sum eventually required to redeem the debt, resulting in excessive accumulations. Such excesses needlessly restrict revenues which might otherwise be expended for the support or development of essential public services.

There should be no special funds except:

Loan funds (established to account separately for the proceeds of bond issues)
Sinking-funds (established on a scientific basis by appropriation so as to produce an adequate but not excessive accumulation)
Assessment funds for local improvements
Endowment funds (established by grants or donations)
Private funds (resulting from the property of private persons received by the city to be returned or distributed to the owners)

All receipts which do not relate specifically to the foregoing classes of funds should be funded in the general fund and thus made subject to the power of appropriation.

Definition of an Appropriation

An appropriation is a grant by a legislative body authorizing an expenditure for a definite purpose or object. Various conditions are attached to appropriations. The amount is generally definite, so that a fixed limit is placed upon the expenditure. There are cases, however, of appropriations indefinite as to amount, the limit of expenditure depending upon collections of specified revenues; appropriations of this kind differ from special funds only in that the expenditure is authorized for a specified fiscal period, while special funds are permanent in character.

In many appropriations the amount is made available for expenditure for a specified period of time—usually a fiscal period—with the added provision that it shall lapse at the end of such period. In another large class the amount appropriated is available for expenditure until the purpose for which it was granted is satisfied.

Importance of Definite Appropriations

It seems obvious that if the legislative body desires to limit the scope and purpose of an expenditure at all, it should make its grant definite. This principle applies except in case of emergency. The amount to be spent should be stated and the purpose of the expenditure defined, at least in general terms. Except in the case of expenditures for public works, the period of availability should be limited to the fiscal period.

Knoxville, Tenn., Latest City To Employ Our Real Estate Assessment Service

Following new legislative authority to replace county assessment with independent municipal valuation for levying taxes for city purposes, Knoxville, Tenn., has joined the ranks of the nearly one hundred municipalities which have called upon our services in equalizing assessments.

Included in this list of municipalities are: Jamestown, Glens Falls and Ithaca, N. Y.; New London, Winsted, Stratford and Saybrook, Conn.; El Paso, Waco, Corpus Christi, Wichita Falls and Houston, Texas; Youngstown, Elyria and Lorain, Ohio.

Taxation officials, city councils, chambers of commerce and civic organizations are showing greater interest every year in the correct solution of taxation problems through scientific assessment.

Philadelphia (Executive Office)
Cleveland (Home Office)
District Offices:
New York
Chicago

The Manufacturers' Appraisal Company
Established 1899
WALTER W. POLLOCK, *President*

District Offices:
Detroit
Pittsburgh
St. Louis
Atlanta
Boston
Springfield, Mass.

Mention THE AMERICAN CITY—it helps.

Appropriations should not be made out of specified revenues, since the result is that the amount to be spent is indefinite. The specified revenues may fall far short of or greatly exceed the amount anticipated in the light of past experience, with the result that the expenditure does not represent the intention of the legislative body. Appropriations should be made out of the general fund in order that they may be a definite part of a comprehensive expenditure program. As has been stated, all receipts which do not relate to loan, sinking, assessment, endowment, or private funds should be funded in the general fund. This is an essential step in laying the foundation for a comprehensive financing program. It is also essential in establishing a control over revenues.

Relation of Appropriations to the Budget

The act of appropriation is the final step required to make the budget effective. In the executive form of budget the estimates approved by the chief executive and submitted to the legislative body represent a request for authority to spend the amounts enumerated for the purposes specified. The legislative body may always reduce and in some cases may increase the estimates, and its final conclusions are expressed in an appropriation act which is a summary of the amended estimates.

The estimates should be presented in complete detail, so as to define precisely the amounts of expenditure proposed to support each department, function, and activity; the estimates should also enumerate the detailed items of personal and other services, supplies, materials and equipment to be procured for each main purpose. The details of the estimates for the acquisition and maintenance of public works, fixed charges for interest, and sinking-fund installments must also be included. These details are essential in order that the estimates may constitute a definite proposal which the executive branch of the government pledges itself to carry out as completely as possible and to the extent to which approval is obtained. In short, the estimates should be treated as a proposal, binding upon the executive branch, when accepted and approved by the legislative branch.

The Appropriation Act as a Specification

Too often the important relationship between the estimates and the appropriations is lost sight of as soon as the appropriation act or ordinance is passed. The estimates are then forgotten and their importance as a basis for interpreting the scope and purpose of the appropriation is disregarded. Such interpretations as are attempted are generally confined to the language of the appropriation act, and conclusions are reached based on individual understanding of the meanings of words and inferences as to the intentions of the legislative body. How much more accurate would be the interpretation if it proceeded from an examination of the estimates as a proposal of the executive, and ended with a determination of the particulars in respect to which the estimates were amended by the legislative body in its act of appropriation.

It is thought that the estimates should be coded, so that specific reference could be made thereto in the appropriation acts. Also, the appropriation acts should be drawn so as to specify to what extent the estimates are approved and as to what they are not approved.

A Means of Fixing Responsibility

In private corporations the board of directors has full power of appropriation, subject to certain limitations expressed in the by-laws, which generally are relatively unimportant. The board elects the executive officers and usually can dismiss them at will. In the municipal corporation the situation is quite different. The legislative body is elected, but as a rule has no power to appoint the executive officers. The mayor is elected, and, generally, also the comptroller or auditor, the treasurer, the tax collector and the tax assessor. The mayor (except under the city manager plan) appoints his departmental heads, who are the chief spending executives. Under these conditions it is often easy to evade responsibility for unwise expenditure and to shift the blame; at least, the question as to who is responsible is easily confused in the minds of the electorate.

The remedy for these conditions is the executive budget administered in accordance with sound practice. Sound practice in budget making requires: (1), the preparation of intelligible estimates in sufficient detail to reflect precisely what the executive proposes; (2), a definite record of the additions, reductions and other changes made by the legislative body; and (3), the drafting of appropriation acts in clear language with definite reference to the estimates, so as to reflect with the least possibility of misunderstanding to what extent and in what particulars the estimates have been approved. Such methods tend to fix responsibility in respect to expenditures. Thus, the appropriation act, besides fulfilling its fundamental purpose of providing authority for expenditure, may also be made an important administrative document.

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NOW---

A Truly Secret Ballot With the Voting Machine

THE Australian ballot was adopted in the United States primarily for the purpose of insuring secrecy to the voter. Election officials recognize now that it does *not* always insure secrecy.

With the paper ballot a voter can identify his ballot by any of a dozen different methods. And the election official, at the same time, can find various means of "spotting" a paper ballot to determine how a given individual has voted.

The voting machine is literally a mechanical Australian ballot, so devised that it insures absolute secrecy. The machine cannot be released for voting until a curtain is completely closed behind the voter. And your vote is actually recorded, just as you cast it, in a locked compartment *inside the machine*, so that no one can possibly see how you have voted.

MORE than 1,800 communities—including many large cities—have discarded the old-fashioned paper ballot for this modern method of conducting elections in complete secrecy, and have found besides that voting machines will pay for themselves by reducing election costs.

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The City's Legal Rights and Duties

Conducted by A. L. H. Street, Attorney at Law

Damages Are Not Ordinarily Recoverable by an Abutting Property Owner on Account of Change in a Street Grade

"The rule is well established in this state that, in the absence of constitutional or statutory provisions therefor, there can be no recovery for damages to property caused by the change of a grade in a street or highway," said the Michigan Supreme Court in the case of Speck vs. Wayne County, 211 North Western Reporter, 626.

Crossing a Street Known to be Closed to Travel Is at One's Own Risk

One who attempts to cross a street known by him to be undergoing repairs and not open to travel, assumes the risks of all defects in it, declares the Massachusetts Supreme Judicial Court in the case of Cody vs. City of Boston, 154 North Eastern Reporter, 753. Incidentally, it is decided that the Massachusetts statutes do not require closing a street by barriers or warning where the fact of construction or repair is clearly apparent to the public.

Obligation to Pay for a Condemned Sewer Right of Way Is a General Debt of a City

That a sewer improvement is to be paid for out of special assessment funds does not prevent the city from being liable, as general indebtedness, for compensation due an owner of land across which a right of way for the sewer is condemned, holds the Washington Supreme Court in the case of Gibson vs. City of Centralia, 253 Pacific Reporter, 787. Whether or not the city will be able to reimburse itself by special assessments against the property within the local improvement district is of no concern to the landowner affected by the condemnation proceedings.

A City Ordinance When Acted Upon May Constitute a Contract Which Cannot Be Abrogated Except by Reasonable Exercise of Police Power

The city of Dayton, Ohio, passed an ordinance permitting the operation of "one-man" street cars. The city's commission refusing to repeal the measure, a repealing ordinance was submitted to the electors under the referendum provisions of the home-rule charter. This ordinance was approved at the election, but, in the case of City of Dayton vs. City Railway Company, lately decided by the United States Circuit Court of Appeals, Sixth Circuit, the repealing measure was held to be void.

The decision appears to have turned directly upon the point that the petition to refer the ordinance to the people was not signed by as many electors as was required. But the opinion distinctly lays down these propositions of law:

An ordinance permitting operation of street cars in a certain way, when acted upon by the street railway company at considerable expense, constitutes a contract, within the meaning of the constitutional guaranty against the impairment of the obligation of contracts without due process of law. But the contract is subject to abrogation in a reasonable exercise of the police power.

Whether the public safety is menaced by the operation of one-man cars depends upon particular circumstances. "It must be noted," says the Court, "that the question as to the safety of the one-man cars is not an absolute one. To show merely that there have been accidents and injuries in their use, is only to cover part of the question. There is necessarily involved a comparison between the two-man type and the one-man type, because accidents with either are practically inevitable. The criterion must be whether there was reasonable ground to conclude that the cars forbidden by the new ordinance were substantially more dangerous to the public than the old cars, a return to which was directed."

City Is Not Liable for Acts of Its Firemen

A city fireman was assigned to prevent spread of a grass fire which a property owner was permitted to set. The fire spread to adjacent property and caused damage. Holding that the city was not liable, the Oregon Supreme Court took the view that, if the fireman set the fire, the city was not responsible, for that was something he was not authorized to do, and, if the damage resulted from negligence on his part as a fireman in failing to prevent spread of the fire, there was no municipal liability because he was engaged in the performance of a governmental function. (Johnson vs. City of Grant's Pass, 251 Pacific Reporter, 713.)

The Right of a City to Exact Automobile Operators' Licenses Is Upheld

An ordinance of the city of Charleston, S. C., requires every automobile driver, excepting non-residents, to secure from the police department a certificate and pay an annual registration fee of $1. Declaring the regulation to be a valid exercise of the police power, in the interest of the public safety, and not a disguised attempt to raise municipal revenue, the South Carolina Supreme Court said in the case of State vs. Perry, 136 South Eastern Reporter, 314:

"The license imposed by the state is purely for the purpose of raising revenue for the building and maintenance of state highways. It is not a tax or license upon the operator of the machine, but upon the machine itself, and it is not intended to be and is not a police regulatory measure. On the other hand . . . the charge of $1 under the ordinance is merely for the purpose of raising a sufficient amount to meet the expense incident to the issuance of the operator's license, etc., under same."

The Court notes that the clear purpose of the ordinance "is not to raise revenue, but prevent

"We Highly Recommend Them for Police Duty"

WALTER F. GUMP, *Sheriff*, Franklin County

THE SHERIFF of this important county in Ohio realizes that the efficiency of his mounted men is determined to a large extent by the efficiency of their motorcycles. The three essentials of *speed*, *safety* and *dependability* were leading considerations when machines were selected. *Low upkeep cost*, naturally, was also a most important factor.

In a recent letter the sheriff says, "I wish to say that we are well satisfied with the performance of the Harley-Davidsons we purchased some time ago. The machines are still giving A-1 service, and we would highly recommend them for police duty under all circumstances."

Send for our special police literature.

HARLEY-DAVIDSON MOTOR COMPANY
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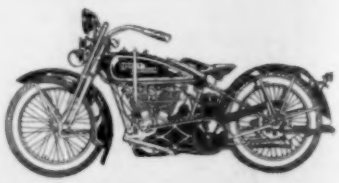

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incompetent and irresponsible persons from driving motor vehicles within the city." The measure makes issuance of a certificate dependent upon a knowledge of the city's ordinance relating to automobile traffic and a demonstration of skill in driving an automobile.

Liability for Overflow of Obstructed Streams

That a watercourse extends through a city's or a county's limits does not make the city or county liable for neglect to remove or prevent obstructions, in the absence of statutory or charter provision, according to the view taken by the New Jersey Supreme Court in the case of Murray Rubber Company vs. City of Trenton, 135 Atlantic Reporter, 475. The Court said:

"It is of course true that the city has for certain purposes jurisdiction over the entire territory within its corporate limits, including streams of water, and, as incident to that jurisdiction, certain control vested in it by the Legislature. This by no means, however, implies that the city either owns or has the right to enter upon the stream in question. Presumably it (a creek) is a body of water covering lands owned by individuals, as to which there would be no right of invasion for purposes of cleaning or removing obstructions."

And it was decided that a city or county is not liable for surface water flowage conditions produced by the construction of hard-surface roads, artificial conduits, etc., affecting the stage of water in the stream.

Permitting a Public Utility to Operate Without a Franchise Gives It Right to Maintain But Not to Extend Its System

A gas company had been permitted to lay mains, etc., in the streets of a town without a franchise from the municipal authorities. When it sought to extend its lines, and to enjoin municipal interference, the town countered with a demand for an injunction against further use of the streets, etc., by the company. Disposing of the controversy, the West Virginia Supreme Court of Appeals said (Marmet Gas Company vs. Town of Marmet, 135 South Eastern Reporter, 839):

"Plaintiff has been allowed to proceed with its plan to supply gas to the town, and to make considerable outlay of money. As long as its system is maintained, the comfort, health, and even safety of its customers require that it be permitted to occupy the streets to the extent necessary for ordinary repairs. A proper use of the streets by it will interfere very little, if any, with the public use. The defendant has known of the development of plaintiff's system, and has seemingly acquiesced therein. It would be inequitable now for the municipality to hamper seriously the plaintiff's business. . . . On the other hand, the plaintiff has no right to use the streets of the town for extending its system, or to interfere seriously with the use of the streets by the public, in repairing its present system, without the permission of defendant."

United States Census Bureau Urges Uniform Municipal Accounting

To the Editor of THE AMERICAN CITY:

The Director of the Census and the writer are very much pleased with the presentation of financial statistics of cities in The Municipal Index for 1927, and also with the classification of government-cost payments of municipalities, shown on page 104. As you know, the Census Bureau has been interested in uniform accounting for the cities for twenty-five years, and uniform accounting is largely the classification of revenues and expenditures. If the cities would prepare their expenditures as shown in this classification, which is a copy of our schedule, we could secure these statistics more accurately and with very little cost. Under the present conditions, in many cities, it requires a great deal of effort to classify the revenues and expenditures in order to have the statistics comparable.

We have a library in the Bureau of the Census in which The Municipal Index and the monthly issues of The American City are on file. We refer very frequently to the statistics which they contain, particularly on such subjects as sewers, sewage disposal, water-supply systems, street cleaning, and other data included in these publications.

Very truly yours,

S. M. GROGAN,

Chief Statistician, Statistics of States and Cities, Bureau of the Census.

Washington, D. C., April 5, 1927.

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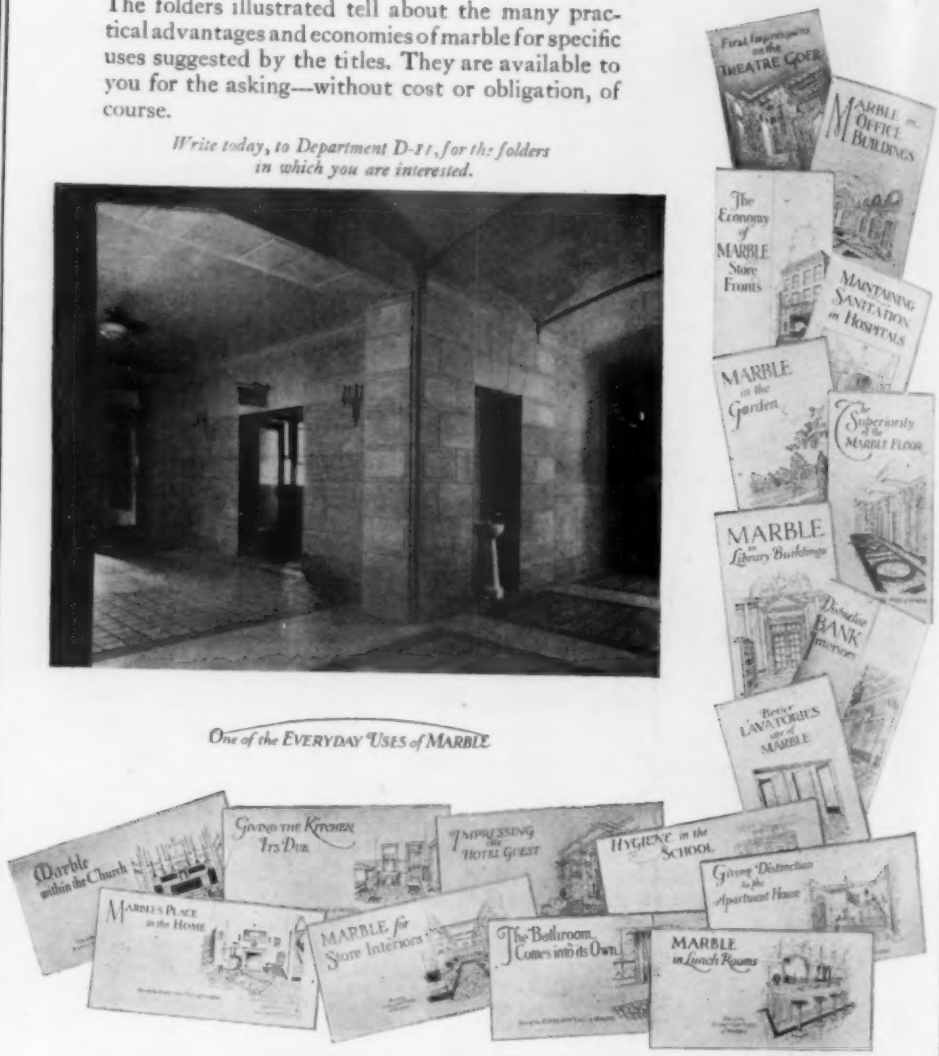
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Zoning Notes

Prepared by Frank B. Williams

Author of "The Law of City Planning and Zoning"

From data collected by the Zoning Committee of New York (233 Broadway)

Recent Zoning Laws and Ordinances

BARRINGTON, ILL.—Ordinance, August, 1926

HARVEY, ILL.—Ordinance, January, 1927

LOWER MARION TOWNSHIP, IOWA.—Ordinance, March 16, 1927

NEW YORK.—Planning law with zoning provisions, Laws 1927, Ch. 175

PLEASANTVILLE, N. Y.—Ordinance, March 15, 1927

CEDARBURG, WIS.—Ordinance, January 14, 1927

Recent Zoning Decisions

CALIFORNIA.—*Dwyer v. City Council of Berkeley*, 73 Cal. Decisions 280. From this case, relating to procedure in initiative and referendum under the city charter, it appears that zoning is a home rule power under the constitution of California. These provision with regard to initiative and referendum do not deprive property owners of their right of protest under the zoning law.

CALIFORNIA.—*Ex parte Ruppe*. The exclusion of undertaking establishments from certain districts of the city is a valid exercise of the police power.

KENTUCKY.—*Cayce v. City of Hopkinsville*, 289 S. W. Rep. 223. The prohibition of the erection of gasoline filling stations within 100 feet of any church or school in any residential district is valid. The ordinance may be invoked against an owner who before its adoption had instituted mandamus proceedings for a permit.

MARYLAND.—*R. B. Construction Co. v. Jackson, Court of Appeals*, reported in *Baltimore Daily Record*, March 28, 1927. The side-yard provisions for the "E" districts in the city are a reasonable exercise of the police power; and the authority given to the Board of Zoning Appeals to vary or modify the regulations where there are practical difficulties or unnecessary hardships in the way of its strict enforcement are lawful.

MISSOURI.—*Streett v. Marshall*. The Supreme Court upholds the exclusion of undertaking establishments from residential districts.

TEXAS.—*Liberty Annex Corp. v. City of Dallas*, 289 S. W. Rep. 1067. A zoning ordinance segregating the residences of whites and blacks is unconstitutional, but private restrictions for that purpose are valid.

WISCONSIN.—*Hayes v. Hoffman*, 211 N. W. Rep. 271. The Supreme Court sustains the decision of the Court below (already summarized in these notes) upholding the establishment of front-yard or setback lines under the police power.

Boards of Adjustment in New Jersey

Recent cases in New Jersey with regard to boards of appeal, or adjustment, have clarified the law of that state on this important subject.

It is a principle of the law that a party considering himself wronged must exhaust his other means of relief before resorting to the courts. It was to avail themselves of this principle that advocates of zoning created local administrative boards of appeal, with power to adjust exceptional cases of hardships or injustice in accordance with the true intent of the zoning ordinance, thus, by remedying the injustice, obviating the necessity of court action. These boards have proved themselves to be a necessary part of an efficient zoning system.

In the earlier zoning legislation in New Jersey, boards of adjustment were authorized, but the powers given them were inadequate. It was in no small part for this reason that in 1924 a new zoning enabling act, clarified by legislation in 1926, was passed, applying to all the municipalities of the state.

For some time it was uncertain whether the New Jersey courts would maintain the authority of boards of adjustment and hold that resort to them was a prerequisite to court action. Recent decisions have now made it clear that such resort under the new laws is necessary. The situation is explained in *Margolis v. Maplewood Township, Supreme Court*, 135 Atl. Rep. 662. The Court in that case states that the law was settled to that effect in *Chancellor Development Corp. v. Senior*, 134 Atl. Rep. 337, overruling prior cases, and goes on to say, "It is true that this Court did hold to the contrary in *Eaton v. Newark*, 128 Atl. Rep. 377, but that holding was subsequently overruled in the Court of Errors and Appeals in *Krumgold v. Jersey City*, 130 Atl. Rep. 635, and *Lutz v. Kaltenbach*, 131 Atl. Rep. 899."

In accord are *Haverland v. Maplewood Township*, 135 Atl. Rep. 553; *Van Winkle v. Quigley*, ib. p. 658; *Greenstein v. Bigelow*, ib. p. 661; *Letz and Katz, Inc., v. Ackerman*, ib. p 667; *Burg v. Ackerman*, ib. p. 672; *Paramount Realty and Construction Co., Inc., v. Schmidt*, ib. p. 789; *Solon v. Scott*, ib. p. 811: See *Songer Realty Corporation v. Axford*, 136 Atl. Rep. 164.

After resort to the Board, the remedy of a party considering himself aggrieved, is certiorari from its decision, and not mandamus. *Letz v. Katz, Supreme Court*, 135 Atl. Rep. 667.

Where the facts are similar to those in the "Nutley Case," the courts, in numerous cases, are still following that decision.

Other Recent New Jersey Decisions

NEW JERSEY.—*A. G. Construction Co. v. Scott, Supreme Court*, 136 Atl. Rep. 207. The presumption is in favor of the fairness and propriety of a zoning ordinance, that it is a reasonable exercise of the police power.

The prohibition of the erection of public garages in "medium volume" residence districts is valid.

NEW JERSEY. *Greenstein v. Bigelow, Supreme Court*, 135 Atl. Rep. 661. The provisions of an ordinance prohibiting the erection in light industrial districts of a building for slaughter and dressing of poultry are valid.

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NEW JERSEY.—*Hartman v. Bigelow, Supreme Court,* 136 Atl. Rep. 201. The ordinance of a city prohibiting the erection of a public or commercial garage on any lot situated within a radius of 200 feet of a church is valid and within the scope of the police power of a city.

NEW JERSEY. *Margolis v. Maplewood Township, Supreme Court,* 135 Atl. Rep. 662. Where the question whether a zoning ordinance providing for amending its provisions so as to relieve property from the prohibition against the erection in given districts of other than single dwellings, should be modified, under P. L. 1926, p. 526 (the zoning enabling act), was discretionary with the township committee, application to the committee to amend the ordinance is not a prerequisite to an application for mandamus for issuance of a permit to erect an apartment within the restricted area.

NEW JERSEY.—*Ricci v. Meyer, Supreme Court,* 135 Atl. Rep. 666. The provisions of an ordinance requiring conformity to the minimum front-yard or setback line, as established by at least one-half the buildings on either side of the street between two intersecting streets, are unconstitutional as a taking of property without compensation.

Recent Zoning Literature

EUCLID VILLAGE CASE

An excellent analysis of the case of *Village of Euclid v. Amoler Realty Co., in the Supreme Court of the United States,* by Alfred Bettman of the Cincinnati Bar, appears in the *University of Cincinnati Law Review* for March, 1927. Mr. Bettman was one of the counsel in that case, appearing for the National Conference on City Planning and other civic and public bodies.

ZONING FOR MANCHESTER

The Planning and Zoning Board of Manchester, N. H., has issued, under date of September 1, 1926, a report on the pending zoning ordinance for that city which is of more than usual interest. In it the case for zoning is stated and the proposed zoning ordinance is analyzed so clearly and readably for the citizen of Manchester that it is of interest to students of zoning everywhere.

The Municipal Bond Market

Best Time in Ten Years to Market City Bonds

By Sanders Shanks, Jr.

Editor, *The Bond Buyer*

THE municipal bond market during the last ten weeks has experienced the most active period in five years. Stimulated by the U. S. Treasury Department's invitation to holders of Second Liberty 4¼'s to convert into a 3½ per cent note, investors have suddenly awakened to a full realization that the definite trend of interest rates is downward and have eagerly absorbed a major proportion of the available floating supply of state, municipal, and other high-grade bonds. With enlarged demand developing at a time when the volume of new issues of municipals was running considerably below normal, a sharp advance in market values was the inevitable result.

Before the close of the month of March municipal bond prices had advanced to the highest point since January, 1917, and by the middle of April, the bonds of the larger cities were selling at approximately the level of that pre-war date. Incidentally, this is the first time in ten years that it has been possible to sell city bonds carrying a coupon rate of less than 4 per cent.

Indications point to stabilization of the municipal bond market at the price level reflected in the appended record of borrowings, with, possibly, some slight reaction should the volume of new issues thrown on the market increase markedly, as now seems probable.

Amount	Issue	Rate %	Term	Yield %
$140,000	Spencer, Mass....	4.00	1-20 Yr. Ser.	3.77
2,270,000	Syracuse, N. Y....	3¾&4	1-40 Yr. Ser.	3.882
750,000	Duluth, Minn.....	4¼	1-30 Yr. Ser.	3.96
1,550,000	Grand Rapids, Mich.	4¼	Various	3.99
2,450,000	Union Co., N. J...	4¼	13¾ Yr.Avg.	4.03
425,000	Dayton, O.....	4½	7 Yr.Avg.	4.12
95,000	Green Bay, Wis..	4¼	10½ Yr.Avg.	4.17
52,500	Scarsdale, N. Y., Sch. Dist.....	4¼	9¾ Yr.Avg.	4.20
1,200,000	Fort Worth, Tex...	4¼	22⅝ Yr.Avg.	4.20
712,000	Charleston, S. C...	4½	13 Yr.Avg.	4.24
600,000	Monroe, La.....	4½	1-40 Yr. Ser.	4.26
100,000	Fredericksburg, Va.	4½	16½ Yr.Avg.	4.45
500,000	Wichita Co., Tex...	4¾	19 Yr.Avg.	4.55
75,000	Ashland, Ore.....	4¾	9½ Yr.Avg.	4.66
1,000,000	Dyer. Co., Tenn...	4¾	30 Yr.	4.75

Shifting of School Fund Deficit to Water Consumers Prevented

AN attack sometimes made upon municipally operated utilities is on the score of the utility's expense account being kept down by the aid of free service from other departments, as well as by tax exemption. A recent editorial in *Engineering News-Record* criticizes the directly opposite policy:

"An extreme case of the common practice of saddling the expenses of other city departments on the water-works is afforded by the recent 50 per cent increase in the water rates of Atlanta, Ga., to meet an $852,000 deficit in the school fund. Happily a water consumer—a woman—of sufficient courage and acumen has risen to the occasion and challenged both the constitutionality and the legality of the increase: the first, as being confiscatory and discriminatory; the second on the ground that the council has no authority to make water consumers pay school expenses. Faced with a temporary injunction against collecting the rates, and perhaps by an outburst of public opinion, the council now proposes a charter amendment to provide a way of meeting the school deficit that will put the burden where it belongs, on the taxpayers instead of the water consumers. It is to be hoped that the suit will come to trial and be carried to the highest court of Georgia. The high rate of increase will make the arguments against such loading of tax burdens on water consumers stand out boldly, even though the basic principles involved are the same whenever the shifting is material and clearly designed."

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Municipal and Civic Publications

Prices do not include postage unless so stated

The Government of European Cities.—By William Bennett Munro, Harvard University. The Macmillan Company, New York. 1927. IX + 432 pp. $3.50.

This is a revised edition, the first one having appeared eighteen years ago, and having been an authoritative text since then. It has been entirely rewritten in order to cover the great changes, particularly since the World War, in both the form and spirit of European city government. It takes up English, Scottish, Irish, French, German and Italian cities, going with great thoroughness into their relation to the national governments, their powers, governmental structure and functions, and the suffrage. It is interesting to note the continued existence of rings and bosses even in English cities, and the influence of national parties on local officials; and the absence of such party influence in French city politics, despite the injection of national and international issues and the increasing resemblance of French party allegiance to the American form. The greatly enlarged electoral franchise in German cities is discussed; governmental features represented in the American city-manager plan are mentioned. The history of Italian city government is gone into, including the drastic limitations on local autonomy made last year by the Fascist régime.

American City Government.—A booklet gotten out by the Kansas City (Mo.) Public Service Institute, dealing with the need of popular information as to governmental matters, the growth and extent of the Municipal Research Bureau movement, and in particular the work and plans of the Kansas City Institute. 34 pp. (Apply to the Institute.)

Cleveland's City Manager Form of Government.—A 20-page pamphlet by Howell Wright, Director of Public Utilities in Cleveland, addressed to his classmates of Yale, '06. It is an explanation and defense of the city manager government in Cleveland, with approval of party activities and opposition to proportional representation. The need of personality and ability in the manager is stressed, and it is stated that they have been attained in Cleveland. (Apply to Mr. Wright.)

Equalization of Taxes in Westchester County.—This is a booklet giving the theory of equalization; its administration at present in Westchester County, which adjoins New York City on the north; systems used in other localities; and recommendations for the Westchester situation, including the adoption of the county as the unit of assessment. Prepared by the Westchester County Research Bureau, 31 Nassau Street, New York. 34 pp. (Apply to the Bureau.)

Annual Survey Number, City Planning.—This (April) quarterly number of the official organ of the American City Planning Institute and the National Conference of City Planning contains the annual survey of City and Regional Planning in the United States, 1926, by Theodora Kimball Hubbard, Honorary Librarian of the Institute. There is also an article by Thomas Adams on "The Technical Approach to the Study and Planning of Regions"; one on parks, by Charles W. Eliot, 2nd; one on city planning in Detroit, by Walter H. Blucher; and a list of definitions for names of streets, ways, etc., by William R. Greeley. 75 cents. (Apply to City Planning Publishing Co., 9 Park Street, Boston, Mass.)

City Water-Supplies of Arkansas.—The November, 1926, *Bulletin* of the University of Arkansas, and Bulletin No. 2 of the Engineering Experiment Station. By Harrison Hale, Professor of Chemistry and Chemical Engineering. Includes reports and analyses for 82 cities and towns in Arkansas. 100 pp. (Apply to the Station, Fayetteville, Ark.)

Proceedings, Twelfth Annual Meeting of the National Association of Commercial Organization Secretaries.—This meeting had a rich program of papers and discussions on civic, commercial, and strictly organizational topics, which are reported in this document of 263 pages. (Apply to Clarence R. Miles, Chamber of Commerce, Davenport, Iowa.)

Fire Prevention Clean-Up Campaign.—An eight-page pamphlet advocating such a campaign, as sponsored by the Committee on Fire Prevention Week of the National Fire Protection Association. (Apply to the Association, 40 Central Street, Boston, Mass.)

Standards of Adequate Fire Protection.—A concise, informative article on this subject by George W. Booth, Chief Engineer, National Board of Fire Underwriters, in the April issue of the *National Municipal Review*. 50 cents. (Apply to National Municipal League, 261 Broadway, New York.)

Working Conditions that Prevail in Fire Departments of United States and Canada, March 1, 1927.—A table taking up eight pages in *The International Fire Fighter* for March; gives data on hours, vacations, sickness and injury allowances, etc., and on the two-platoon system. (Apply to the magazine, A. F. of L. Building, Washington, D. C.)

Regulations for Foam Extinguisher Systems.—A small pamphlet giving the regulations of the National Board of Fire Underwriters for these systems, as recommended by the National Fire Protection Association. 22 pp. 1926. (Apply to the Association, 40 Central Street, Boston, Mass.)

Comparative Analysis of Fire Department Appropriations.—A two-page table of data for 1916, 1925, and 1926, for 60 cities of New York State. Report No. 2235 of the New York State Bureau of Municipal Information. (Apply to the Bureau, City Hall, Albany, N. Y.)

Municipal Markets.—Report No. 229, Municipal Markets, and Report No. 2251, Municipal Market Statistics, of the New York State Bureau of Municipal Information. The first of these is a discussion and summary of the tabulated statistical information of which the latter is made up, and also presents conclusions derived therefrom. They consist of 21 and 40 large mimeographed sheets, respectively. January 1, 1927. (Apply to the Bureau, City Hall, Albany, N. Y.)

Civil Service Rules, Classification and Rates, St. Paul, Minn.—Two small booklets and eight loose-leaf cards, of the Civil Service Bureau, 201 Commerce Building, St. Paul, Minn. One booklet, of 79 pages, gives the rules and the classification of the civil service; one of 19 pages gives the Salary Standardization and Rates of Compensation for City Employments; and the cards show the present salary limits, the positions and the line of promotion in the various grades. Revised to February, 1927. (Apply to the Bureau.)

Baltimore's Extensive School Program.—*The Baltimore Municipal Journal* for March 10 is chiefly devoted to the building program and the general progress of the public schools of the city. 5 cents. (Apply to the *Journal*, 904 American Building, Baltimore, Md.)

Experimental Studies of Water Purification.—Reprint No. 1114 from the *Public Health Reports*, consisting of two articles: I, Description of Experimental Water-Purification Plant, by Frederick J. Moss, Assistant Sanitary Engineer, U. S. Public Health Service; and, II, Preliminary Review of Results of Primary Experiments, by H. W. Streeter, Sanitary Engineer, U. S. Public Health Service. 1926. 26 pp. 10 cents. (Apply to Government Printing Office, Washington, D. C.)

Proceedings of Fourth Annual Short School, Texas Association of Sanitarians.—A compilation of 155 pages, with over 30 pages and discussions, in seven sections: I, Aims and Objectives of the Association; II, Organization; III, Public Health Education; IV, Waste Disposal and General Sanitation; V, Food Protection; VI, Water Supplies; VII, Disease Control Procedure. The School met in Fort Worth on October 27-30, 1926. Cloth $1.25, paper 60 cents; postage 10 cents. (Apply to the Association, Capitol Station, Austin, Texas.)

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Getting Out the Vote.—By Harold F. Gosnell, Assistant Professor in Political Science, University of Chicago. The University of Chicago Press. 1927. IX + 128 pp. Cloth, $2.50; paper, $1.60.

This is subtitled "An Experiment in the Stimulation of Voting," and describes an attempt made in 1924 and 1925 to measure the effect of a non-partisan mail canvass to get out the vote of the citizens living in selected districts in the city of Chicago, as a continuation of the non-voting study begun in Chicago in connection with the mayoralty election of 1923. The latter study was reported by Professors Merriam and Gosnell in the book "Non-Voting," which, like the present volume, is in the University of Chicago Studies in Social Science. The non-voting study was used as a guide in the "stimulation experiment," particularly from the standpoint of eliminating possible excuses for not voting. Various types of notices, including cartoons, were sent out, for both registration and election days. Scientific and objective methods of conducting the study and interpreting the results were stressed. The author was convinced that the experiment provided a reliable measure of the effect of efforts to stimulate interest in elections, and that these efforts are definitely worth while.

The Use of Voting Machines in Michigan.—By James K. Pollock, Ph. D., Bulletin No. 5 of the Bureau of Government, University of Michigan. Recounts the history and present extent of use of voting machines in Michigan, which permitted their use as early as 1893. Five out of 83 counties use them; Grand Rapids is the largest city therein. Detroit is experimenting with them. 6 pp. (Apply to the Bureau, at Ann Arbor, Mich.)

The Negro in Detroit.—A report in twelve separately-bound mimeographed sections, prepared for the Mayor's Inter-Racial Committee by a special survey staff under the general direction of the Detroit Bureau of Governmental Research. Those directly in charge were Forrester B. Washington, Executive Secretary of the Armstrong Association of Philadelphia, and Robert T. Lansdale, of the Sociology Department of the University of Michigan. The survey was financed by the Detroit Community Fund. The various sections are: I, Introduction (19 pp.); II, Population (21 pp., 2 maps); III, Industry (31 pp., 1 map); IV, Thrift and Business (27 pp.); V, Housing (62 pp., 1 map); VI, Health (28 pp.); VII, Recreation (22 pp., 1 map); VIII, Education (25 pp.); IX, Crime (61 pp., 2 maps); X, Religion (24 pp., 1 map); XI, Community Organization (19 pp.); XII, Welfare (56 pp.). 1926. (Apply to the Bureau, 316 East Jefferson Avenue, Detroit, Mich.)

Report of the Mayor's Committee on Race Relations, Detroit, Mich.—Findings and recommendations based upon a survey of race conditions in the city, undertaken in 1926 (see "The Negro in Detroit," in this department). This comprises the March 10 issue of *Public Business*, published by the Detroit Bureau of Governmental Research. The survey was occasioned primarily by the increase of the colored population in Detroit from 10,000 to 80,000 since the World War. 16 pp. (Apply to the Bureau.)

The Gang.—By Frederic M. Thrasher, Ph.D., Professor of Sociology, Illinois Wesleyan University. The University of Chicago Press, Chicago, 1927. XXII + 571 pp. Illustrated. $3.00 postpaid. Reviewed by David C. Adie.

The story of the "gang," based on a study of 1,313 groups in Chicago. The book reads like a "thriller." As a matter of fact, it is a well-balanced social study conducted along sound scientific lines; an amazing picture of youth threading its way through the complex pattern of a modern urban community. The author displays a real understanding of the boy and of the community factors that surround him, and possesses the gift of colorful writing. Not in years has there been published as challenging a book to those interested in playgrounds and recreation, Americanization, delinquency, boy life in general, as this. The final chapter, on "Attacking the Problem," is finely constructive. The bibliography is well chosen. A "Chicago Gangland" map accompanies the volume.

Bulletin of Social Research.—A new publication by the Social Research Society of Southern California. Published at the University of Southern California, Los Angeles. No. 1, dated March, 1927, consists of eight pages and contains notes on recent developments in sociology and various aspects of social research. (Apply to the Society, at the University.)

Probation and Delinquency.—By Edwin J. Cooley, Chief Probation Officer, Court of General Sessions, New York City. Published by Catholic Charities of the Archdiocese of New York, 477 Madison Avenue, New York. 1927. XV + 544 pp. $3.00 postpaid.

For two years past a practical study of offenders in the criminal court of New York County (the borough of Manhattan), in conjunction with a probation system, was conducted by the Catholic Charities of New York under the direction of Mr. Cooley, Professor of Criminology at Fordham University and former Chief Probation Officer of the Magistrates' Courts of New York City. The book at hand describes this work and gives the conclusions drawn therefrom. Protestant and Jewish agencies also conducted probation work, but the Catholic study here reported, sponsored by Cardinal Hayes, represents a special effort to demonstrate and utilize the probation system with unusually adequate equipment, resources, and personnel. Beginning with the current year, the probation work of the Court has been taken over by the state, under civil service, with Mr. Cooley as chief probation officer for the time being. The book is forcefully and eloquently written, imbued to a considerable extent with the religious attitude and with tempered sympathy, but having a prevailingly scientific spirit. It is catholic as well as Catholic in scope and outlook. The relation of youth and the crime problem is stressed, 62.8 per cent of the 3,053 cases studied being less than 25 years old. Individualized study and guidance are emphasized, with realization of the effects of social conditions, and the inadequacy of indiscriminate severity.

The Dublin Civic Survey.—By Horace T. O'Rourke, F.R.I.A.I., and the Dublin Civic Survey Committee for the Civics Institute of Ireland. The University Press of Liverpool, Ltd.; Hodder & Stoughton, Ltd., London. 1925. 150 pp., 50 illustrations, 10 colored maps, 8 aerial photographs. $4.50. Reviewed by Dr. W. E. Mosher, Managing Director, School of Citizenship and Public Affairs, Syracuse University.

The Civics Institute of Ireland has set for itself the task of preparing a model plan for the reconstruction and further development of the city of Dublin. Under its auspices two volumes have already been published. The first dealt with the "Dublin of the Future," presenting the prize design which was selected after an international competition of town-planning experts. The second consists of an elaborate civic survey and covers conditions as they are. The third is to grow out of these two, as it were, and to propose the final town plan. The second volume, recently off the press, contains many features that will be of interest to all friends of city planning. It is handsomely gotten up, profusely illustrated, and supplied with a series of admirable maps. The survey proper consists of seven sections and deals with the following phases of Dublin and its environs: Archeology, Recreation, Education, Hygiene, Housing, Industry and Commerce, and Traffic. In a concluding appendix are brought together the various town planning proposals for the city. The most sketchy part of the survey has to do with the summary of commercial and industrial activities of the city.

Games and Sports in British Schools and Universities.—A paper-covered book of 249 pages, published by the Carnegie Foundation for the Advancement of Teaching; it is by Howard J. Savage, staff member of the Foundation, and is Bulletin No. 18. There are chapters on the British sports tradition; sport in English public schools, day schools, the older universities and the newer universities; games and sports at Scottish universities; the amateur tradition in British sport; and a general summary. (Apply to the Foundation, 522 Fifth Avenue, New York City).

The Conduct of Physical Activities in Elementary and High School.—By Wilbur P. Bowen, Professor of Physical Education, Michigan State Normal College. A. S. Barnes & Co., New York. 1927. 173 pp. $2.00.

While the author denies the dominant importance of any one purpose of physical activities in schools—listing, in the approximate order of attainment: knowledge and skill, physical development, wholesome recreation, social training, and health—he nevertheless is particularly insistent that the recreative aims shall not be submerged, and that pleasure in living shall be given due recognition. He discusses modes of stimulating interest in physical training, the relative values of the various separate activities, and the technique of conducting and teaching them, and gives many specific suggestions as to exercises, games, tournaments, and comprehensive programs. There are illustrations of various personal exercises, and examples of music for rhythmic activities.

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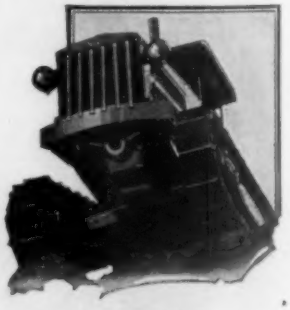

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Report of a Variety Survey in the Vitrified Paving Brick Industry for the Year 1926.—This was made at the request of the Department of Commerce of the United States by the National Paving Brick Manufacturers Association, and submitted to the Permanent Committee on Simplification of Variety and Standards for Vitrified Paving Brick of the Department of Commerce, March 31, 1927. It includes reports of variety surveys made for other years also. 12 pp. (Apply to the Association, Engineers Building, Cleveland, Ohio.)

The Blueprinted Plan as a Contract Document.—A paper by Sturgis H. Thorndike, reprinted from the Proceedings of the 32nd annual convention of the American Society for Municipal Improvements. 4 pp. (Apply to Fay, Spofford & Thorndike, Consulting Engineers, 44 School Street, Boston, Mass.)

The Problem of Financing Our State Highways.—Mimeographed material prepared by the Chamber of Commerce of Newark, N. J., in connection with the question of the state highway expansion program in New Jersey. It includes several statistical tables giving comparisons between all the states in such items as miles of road per square mile of state area; and revenues per motor vehicle from fees and licenses and from gasoline taxes, with data upon which based; there are also various inter-county comparisons for New Jersey. (Apply to the Chamber's Bureau of Research.)

Special Assessments for Street Improvements in Nebraska Municipalities.—A short article by Wm. Grant, in the March *Nebraska Municipal Review*, on the theory of special assessments and their application in Nebraska. 15 cents. (Apply to the *Review*, Kearney, Nebr.)

Control of Taxation and Assessments for Public Improvements.—Supplement to the Los Angeles *City Club Bulletin* for March 19, comprising a paper by Hugh S. Pomeroy, President of the Club and of the City and Regional Planning Section of the League of California Municipalities, and Secretary of the Los Angeles County Regional Planning Commission. A comprehensive financial plan of expenditures for capital purposes, based upon a comprehensive physical plan, is recommended. 11 pp. (Apply to the Club.)

Methods of Assessment for Street Paving at Flint, Mich.—A 2-page article by Harry McClure, City Engineer of Flint, in the *Engineering News-Record* for April 14, 1927. It gives formulas and tables used in determining amounts for lots of different shapes. Flint applies paving assessments to lots within one-half block of the improvement, whether abutting or not. 25 cents. (Apply to McGraw-Hill Publishing Co., Tenth Avenue and 36th Street, New York.)

Report on Improved Transportation Facilities in the Boston Metropolitan District.—The Division of Metropolitan Planning, of the Commonwealth of Massachusetts, submits this report, under date of December 1, 1926, to the Legislature; it is based upon a study of the passenger transportation problem as it affects the present and future needs of the Metropolitan District, and presents a physical and financial plan for future rapid-transit development, involving an extension of public control. 85 pp. and 17 plates. (Apply to Division of Metropolitan Planning, State House, Boston, Mass.)

The Public Service Institute.—Abstracts of papers and addresses presented at the Public Service Institute held at the Massachusetts Institute of Technology, March 16-18, 1927, on the relation of technology and the public service. Prominent engineers, educators, and public administrators participated. Contained in the March issue of *The Tech Engineering News*. (Apply to the *News*, Walker Memorial, Cambridge 39, Mass.)

A Major Street Plan for Oakland.—A pamphlet advocating the preparation of a comprehensive major street plan for Oakland, Calif.; it is issued by the Major Highway and Traffic Committee of One Hundred. 13 pp. (Apply to the Committee, 295 Federal Telegraph Building, Oakland.)

Report of the Connecticut State Parks and Forests.—This comprises a report of the Connecticut State Park and Forest Commission for the two years ending June 30, 1926, and a report of the State Forester for the same period. Illustrated. 120 pp. (Apply to the Commission, Hartford, Conn.)

Safety Education in the Elementary School.—By Ruth Streitz, Ph. D., Associate Professor of Education, University of Cincinnati. National Bureau of Casualty and Surety Underwriters, New York. 1926. VII + 142 pp. $1.10 postpaid.

This study, described as relating to a technique for developing subject matter for safety education in specific situations, was prepared under a graduate fellowship at Columbia University, one of three fellowships in Safety Education maintained by the National Bureau of Casualty and Surety Underwriters during the academic year 1925-1926. It constitutes Volume I of the Educational Series, of the publications of the Bureau. Current practice and general objectives in safety education are discussed, and the determination of specific objectives for a particular situation is described, including the use of a social survey of a school, a survey of pupil experiences regarding accidents, statistical reports of accidents in the district, study courses of other schools, and textbooks. A proposal course of study is given, covering 57 pages of the text.

1926 Transactions of the National Safety Council: Volume III, Public Safety and Education Sessions.—These cover the general session on this subject, on October 26, 1926, and the sessions of the Public Safety Division on the following three days. Traffic regulation and control were topics emphasized by papers and discussions on traffic signals, surveys and organization. Other topics included drivers' license laws, home and school safety, and the special interests of state, city and police officials. 204 pp. Indexed. (Apply to the Council, 120 West 42d Street, New York.)

Traffic and Thoroughfare Plan, Hartford, Conn.—A handsomely made-up report of 127 pages, by Herbert S. Swan, city planner, of New York City. It includes a traffic survey, and sections on through traffic streets, automatic traffic signals, trolleys, parking, the Park River, major thoroughfares, and carrying out the traffic and thoroughfare plan. Many illustrations, diagrams and maps. (Apply to Commission on the City Plan, Hartford, Conn.)

Annual Report of the Commission of Immigration and Housing of California, 1926.—This is a booklet of 36 pages, giving immigration statistics, work of the complaint department, sections regarding the camp department, housing department, jails, the text of the act creating the Commission of Immigration and Housing, and a list of its publications. (Apply to the Commission, State Building, San Francisco, Calif.)

Skyscrapers.—Three articles in the April issue of the *National Municipal Review:* "The Skyscraper Does Cause Congestion," by Henry H. Curran, Counsel for the City Club of New York; "Tall Taxes for Tall Buildings," by Albert S. Bard, New York; "The Legality of a Surtax upon Buildings of Excessive Volume," by Frank B. Williams, New York. These continue the discussion on this subject from the February and the March *Review*. 50 cents. (Apply to National Municipal League, 261 Broadway, New York).

Report of the State Board of Housing, New York.—A report to Governor Smith and the State Legislature on the need of extending the rent laws which automatically expire on June 1, 1927. This includes a study of new construction, vacancies, overcrowding and congestion in New York City and to a lesser extent elsewhere, and a discussion of the status of the housing emergency which produced the legislation in question. 64 pp. Legislative Document (1927) No. 85. (Apply to the Board, Albany, N. Y.)

Special Slum Number, Garden Cities & Town Planning.—The April-May issue of the magazine named contains several articles on the slum problem, Glasgow, Bristol and Welshpool receiving special treatment. There is an article on "The Law and Unfit Houses," and a Table of Insanitary Houses and Demolition Schemes. One shilling. (Apply to The Garden Cities and Town-Planning Association, 3, Gray's Inn Place, Gray's Inn, London, W. C. 1, England.)

The Slum Problem.—The leading article in the English *Journal of the Town Planning Institute* for March, 1927, by Major Harry Barnes. He develops the history of the efforts in England to improve the housing condition of industrial workers and discusses various features of the necessity and the problem of providing mass housing. There are four pages of discussion after the 16-page article. (Apply to the *Journal*, No. 11 Arundel Street, London, W. C., England.)

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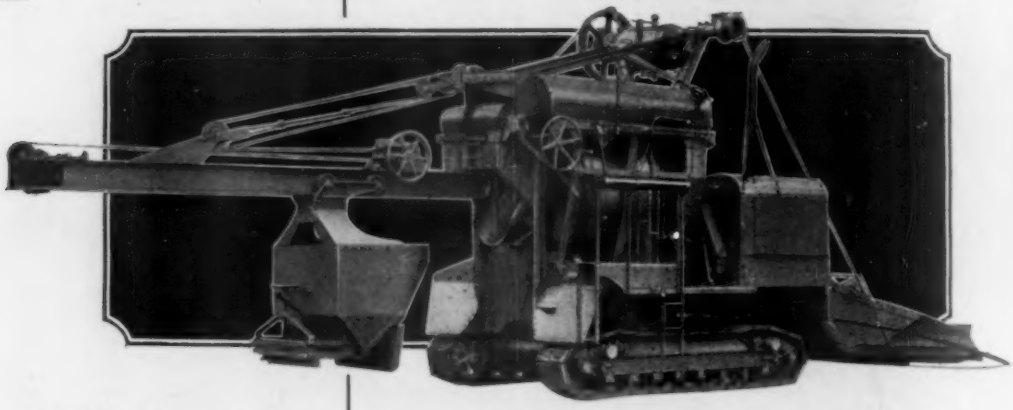

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The Control of Communicable Diseases.—Report of the Committee on Standard Regulations for the Control of Communicable Diseases, of the American Public Health Association. Supplement to the March, 1927, issue of the *American Journal of Public Health*. This report outlines the standard methods in this field. The committee's previous report, in 1916, has served as a handbook to nurses, health officers and others. The two reports are compared in the February issue of the *Journal*. Reprints of the new report are available. 24 pp. (Apply to American Public Health Association, 370 Seventh Avenue, New York.)

What Is Detroit Doing for Its Health?—The January, 1927, issue of **City Health**, the bulletin of the Detroit Department of Health, is so entitled, and contains the "Annual Report on the Activities of the Department of Health and Public Health Conditions in Detroit in 1926." 52 pp. (Apply to the Department, 1300 Beaubien Street, Detroit, Mich.)

Standard Milk Ordinance Results in 14 Alabama Towns.—By Leslie C. Frank, Sanitary Engineer, United States Public Health Service; S. W. Welch, State Health Officer; and C. A. Abele, Director, Bureau of Inspection, Alabama State Board of Health. An 11-page article in *Public Health Reports* for March 11, 1927, describing the improvement following the adoption of the Standard Milk Ordinance of the United States Public Health Service. 5 cents. (Apply to Government Printing Office, Washington, D. C.)

Appraisal Form for Rural Health Work.—A subcommittee of the Committee on Administrative Practice, of the American Public Health Association, has prepared this for experimental use for one year. It contains a Survey Schedule, and a related Appraisal Form, for certain typical activities common to rural, county, or district health work. 72 pp. (Apply to the Association, 370 Seventh Avenue, New York.)

Can Legislatures Learn from City Councils?—A six-page paper by Howard White of Ohio Wesleyan University in the February number of *The American Political Science Review*, which raises the question whether short but frequent sessions of state legislature are not desirable in order to abolish end-of-session rushes and to give more continuous legislative supervision of state affairs. (Apply to the *Review* at 450 Ahnaip Street, Menasha, Wis.)

Proceedings of the 32d Annual Convention, American Society for Municipal Improvements.—A cloth-bound volume of 528 pages, published March 1, 1927, reporting the convention held in November, 1926, in Washington, D. C. There are papers and discussions on street paving and design, maintenance, cleaning, and snow removal; city planning, public welfare, street and traffic lighting, sewerage, sanitation, garbage disposal, water-works, and municipal legislation and finance; specification committee reports, business proceedings, etc. $7.50. (Apply to the Secretary, 315 Commercial Building, St. Louis, Mo.)

The Municipal Ownership of Chicago's Street Railways.—This is a report on what is claimed to be a practical method available to acquire the Chicago Surface Lines for municipal ownership and operation, prepared by the Detroit-Plan Traction Purchase Club, dated March, 1927. It is based primarily on the experience of Detroit, Mich. 13 pp. (Apply to the Club, Room 818, 155 North Clark Street, Chicago.)

Reports Received

BUFFALO, N. Y.—Annual Report, Bureau of Public Utilities, Department of Public Affairs, year ending June 30, 1926.
CHICAGO, ILL.—Annual Appropriation Bill for 1927.
ERIE, PA.—Annual Report, Commissioners of Water-Works, 1925.
LOS ANGELES, CALIF.—Mayor's Annual Message, 1927.
MULTNOMAH COUNTY, PORTLAND, ORE.—Budget Facts and Financial Statistics, 1927.
PONTIAC, MICH.—Annual Reports, 1926.
ST. LOUIS, MO.—Annual Report, Board of Commissioners, Tower Grove Park, 1926.
SALEM, MASS.—Annual Report, Park Department, 1926.
SAN JOSE, CALIF.—Annual Report, Health Department, 1926.
SPRINGFIELD, VT.—Annual Report of Village, year ending March 5, 1927.
SPRINGFIELD, VT.—Annual Report of Town, year ending February 1, 1927.
TORONTO, ONT.—Annual Report, Department of Street Cleaning, 1926.
TORONTO, ONT.—Annual Report, Assessment Commissioner, 1926.
TWO RIVERS, WIS.—First Annual Report of the City under City Manager Government, 1926.
WESTMOUNT, QUE.—Annual Reports, year ending October 31, 1926.

Conventions This Month

MAY 2-5.—WASHINGTON, D. C.
Chamber of Commerce of the United States of America. Annual meeting. Secretary, D. A. Skinner, 1615 H Street, N. W., Washington, D. C.

MAY 9-11.—WASHINGTON, D. C.
National Conference on City Planning. Annual conference. Secretary, Flavel Shurtleff, 130 East 22nd Street, New York.

MAY 9-11.—WASHINGTON, D. C.
American Child Health Association. Annual meeting. Secretary, Dr. Philip Van Ingen, 370 Seventh Avenue, New York.

MAY 9-11.—DES MOINES, IOWA.
International Association of Policewomen. Annual convention. President, Mrs. Mina C. Van Winkle, Washington, D. C.

MAY 9-12.—CHICAGO, ILL.
National Fire Protection Association. Annual meeting. Secretary, Franklin H. Wentworth, 40 Central Street, Boston, Mass.

MAY 11-12.—CAMBRIDGE, MASS.
Massachusetts Highway Association. Open-Air Road-Building Machinery and Equipment Show. Secretary, John M. McCarthy, Natick, Mass.

MAY 11-13.—WASHINGTON, D. C.
American Institute of Architects. Annual convention. Executive Secretary, E. C. Kemper, The Octagon, Washington, D. C.

MAY 11-18.—DES MOINES, IOWA.
American Association for Community Organization. Executive Director, Dr. Allen T. Burns, 215 Fourth Avenue, New York.

MAY 11-18.—DES MOINES, IOWA.
National Conference of Social Work. Annual conference. Secretary, Howard R. Knight, 277 East Long Street, Columbus, Ohio.

MAY 12-13.—SAN ANGELO, TEXAS.
League of Texas Municipalities. Annual convention. Executive Secretary, Harvey W. Draper, 815 Capitol Avenue, Houston, Texas.

MAY 17-20.—PALISADES INTERSTATE PARK, NEW YORK.
National Conference on State Parks. Seventh national conference. Secretary, Beatrice M. Ward, 905 Union Trust Building, Washington, D. C.

MAY 21-23.—WASHINGTON, D. C.
Conference of State and Territorial Health Authorities. Annual conference. Address: United States Public Health Service, Washington, D. C.

MAY 23-25.—DENVER, COLO.
Colorado Municipal League. Annual meeting. Secretary, Don C. Sowers, University of Colorado, Boulder, Colo.

MAY 23-26.—WHITE SULPHUR SPRINGS, W. VA.
American Society of Mechanical Engineers. Spring meeting. Secretary, Calvin W. Rice, 29 West 39th Street, New York.

MAY 26-28.—VANCOUVER, B. C.
Town Planning Institute of Canada. Annual meeting. Secretary, John M. Kitchen, City Hall, Ottawa, Ont.

MAY 31-JUNE 2.—NIAGARA FALLS, N. Y.
Conference of Mayors and Other City Officials of the State of New York. Annual meeting. Secretary, William P. Capes, City Hall, Albany, N. Y.

(For future convention dates, see page 715)

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Conventions—When and Where

(For conventions to be held during May, see page 713)

JUNE 4-6.—CHICAGO, ILL.
Conference of State Sanitary Engineers. Annual meeting. Secretary, Arthur P. Miller, 3 B Street S. E., Washington, D. C.

JUNE 6-8.—TULSA, OKLA.
American Association of Engineers. Annual convention. Acting Secretary, Miss M. E. McIver, 63 East Adams Street, Chicago, Ill.

JUNE 6-9.—WINDSOR, CANADA.
International Association of Chiefs of Police. Annual convention. Secretary, George Black, Chief of Police, Wilmington, Del.

JUNE 6-9.—GRAND RAPIDS, MICH.
National Association of Purchasing Agents. Annual convention and Informashow. Secretary, W. L. Chandler, Woolworth Building, New York.

JUNE 6-10.—ATLANTIC CITY, N. J.
National Electric Light Association. Annual convention and exhibition. Secretary, A. Jackson Marshall, 29 West 39th Street, New York.

JUNE 6-11.—CHICAGO, ILL.
American Water Works Association. Annual convention. Secretary, Beekman C. Little, 170 Broadway, New York.

JUNE 7.—OTTAWA, CANADA.
National Association of Comptrollers and Accounting Officers. Annual convention. Secretary, Mark M. Foote, 501 City Hall, Chicago, Ill.

JUNE 10-11.—PORTLAND, MAINE.
New England Association of Commercial Executives. Annual meeting. Secretary, E. G. Kingsbury, Chamber of Commerce, Stamford, Conn.

JUNE 10-11.—ALLENTOWN, PA.
Pennsylvania Commercial Secretaries' Association. Mid-year meeting. Secretary-Treasurer, E. A. Hirschman, Chamber of Commerce, York, Pa.

JUNE 13.—TORONTO, CANADA.
Canadian Public Health Association. Annual meeting. General Secretary, J. T. Phair, Spadina House, Toronto, Ont.

WEEK OF JUNE 13.—On Board S. S. Kingston, Visiting Hamilton, Niagara Falls, Toronto, and Rochester, N. Y.
Union of the Municipalities of the Province of Quebec. Annual convention. Secretary-Treasurer, T. D. Bouchard, 120 Rue St. Jacques, Montreal, Que.

WEEK OF JUNE 13.—TORONTO, ONT.
Canadian Public Health Association. Annual meeting. General Secretary, J. T. Phair, Spadina House, Toronto, Ont.

JUNE 14-16.—MINNEAPOLIS, MINN.
League of Minnesota Municipalities. Annual convention. Executive Secretary, Morris B. Lambie, University of Minnesota Library, Minneapolis, Minn.

JUNE 16-17.—PHILADELPHIA, PA.
American Automobile Association. Annual meeting. General Manager, Ernest N. Smith, Pennsylvania Avenue at 17th Street, Washington, D. C.

JUNE 20-24.—DETROIT, MICH.
American Institute of Electrical Engineers. Summer convention. Secretary, F. L. Hutchinson, 33 West 39th Street, New York.

JUNE 20-24.—FRENCH LICK, IND.
American Society for Testing Materials. Annual meeting. Secretary, C. L. Warwick, 1315 Spruce Street, Philadelphia, Pa.

JUNE 20-25.—PARIS, FRANCE.
International Congress of Administrative Sciences. Third meeting. Address: Professor Leonard D. White, University of Chicago, Chicago, Ill.

JUNE 20-27.—TORONTO, ONT.
American Library Association. Annual convention. Executive Secretary, Carl H. Milam, 86 East Randolph Street, Chicago, Ill.

JUNE 21-23.—PORTLAND, MAINE.
New England Association of Fire Chiefs. Annual convention. Secretary, Chief John W. O'Hearn, Watertown, Mass.

JUNE 23-25.—FORT WORTH, TEXAS.
Chiefs of Police and City Marshals Association of Texas. Annual conventino. Secretary, George A. Smith, P. O. Box 299, Dallas, Texas.

JUNE 23-25.—SHERMAN, TEXAS.
Texas Commercial Executives Association. Annual conference-school. Secretary, Maury Hopkins, Plainview, Texas.

JUNE 24-25.—ITHACA, N. Y.
New York State Secretaries' Conference. Annual meeting. Secretary, Ralph C. Smith, Savings Bank Building, Ithaca, N. Y.

JUNE 26-30.—DENVER, COLO.
American Community Advertising Association. Annual meeting. Secretary-Treasurer, Don E. Mowry, 401 Cantwell Building, Madison, Wis.

JUNE 27-JULY 2.—STOCKHOLM, SWEDEN.
International Chamber of Commerce. Fourth general meeting. Secretary American Section, Lacey C. Zapf, 1615 H Street, Washington, D. C.

JULY 3-8.—SEATTLE, WASH.
National Education Association of the United States. Annual meeting. Secretary, J. W. Crabtree, 1201 16th Street, Washington, D. C.

JULY 17-23.—PALO ALTO, CALIF.
Western School for Commercial Secretaries. Address: Professor Edwin A. Cottrell, Stanford University, Palo Alto, Calif.

AUGUST 9-12.—PORTLAND, ORE.
International Association of Fire Chiefs. Annual convention. Secretary, James J. Mulcahy, Yonkers, N. Y.

AUGUST 10-13.—SEATTLE, WASH.
National Association of Real Estate Boards. Annual convention. Executive Secretary, Herbert U. Nelson, 310 South Michigan Avenue, Chicago, Ill.

AUGUST 16-19.—SALT LAKE CITY, UTAH.
International Association of Municipal Electricians. Annual convention. Secretary, Erwin H. Benz, Municipal Building, West New York, N. J.; Chairman of Exhibit Committee, Daniel J. Morgan, Sales Engineer, Hazard Manufacturing Company, Wilkes-Barre, Pa.

AUGUST 22-SEPTEMBER 3.—EVANSTON, ILL.
National School for Commercial and Trade Organization Executives. Address: Hugh Lynch, Merchants Association, Woolworth Building, New York.

SEPTEMBER.—PHILADELPHIA, PA.
American Institute of Park Executives. Annual convention. Executive Secretary, Will O. Doolittle, Box 422, Tulsa, Okla.

SEPTEMBER.—BOSTON, MASS. (TENTATIVE.)
New England Water Works Association. Annual convention. Secretary, Frank J. Gifford, 715 Tremont Temple, Boston, Mass.

SEPTEMBER 13-15.—DUBUQUE, IOWA.
International City Managers' Association. Annual convention. Executive Secretary, John G. Stutz, Lawrence, Kans.

SEPTEMBER 26-30.—CHICAGO, ILL.
National Safety Council. Annual Safety Congress. Managing Director, W. H. Cameron, 108 East Ohio Street, Chicago, Ill.

OCTOBER 3.—DENVER, COLO.
American Association of State Highway Officials. Annual convention. Executive Secretary, W. C. Markham, 638 Munsey Building, Washington, D. C.

OCTOBER 3-7.—MEMPHIS, TENN.
Playground and Recreation Association of America. Annual convention. Secretary, H. S. Braucher, 315 Fourth Avenue, New York.

OCTOBER 17-21.—CINCINNATI, OHIO.
American Public Health Association. Annual meeting. Secretary, Homer N. Calver, 370 Seventh Avenue, New York.

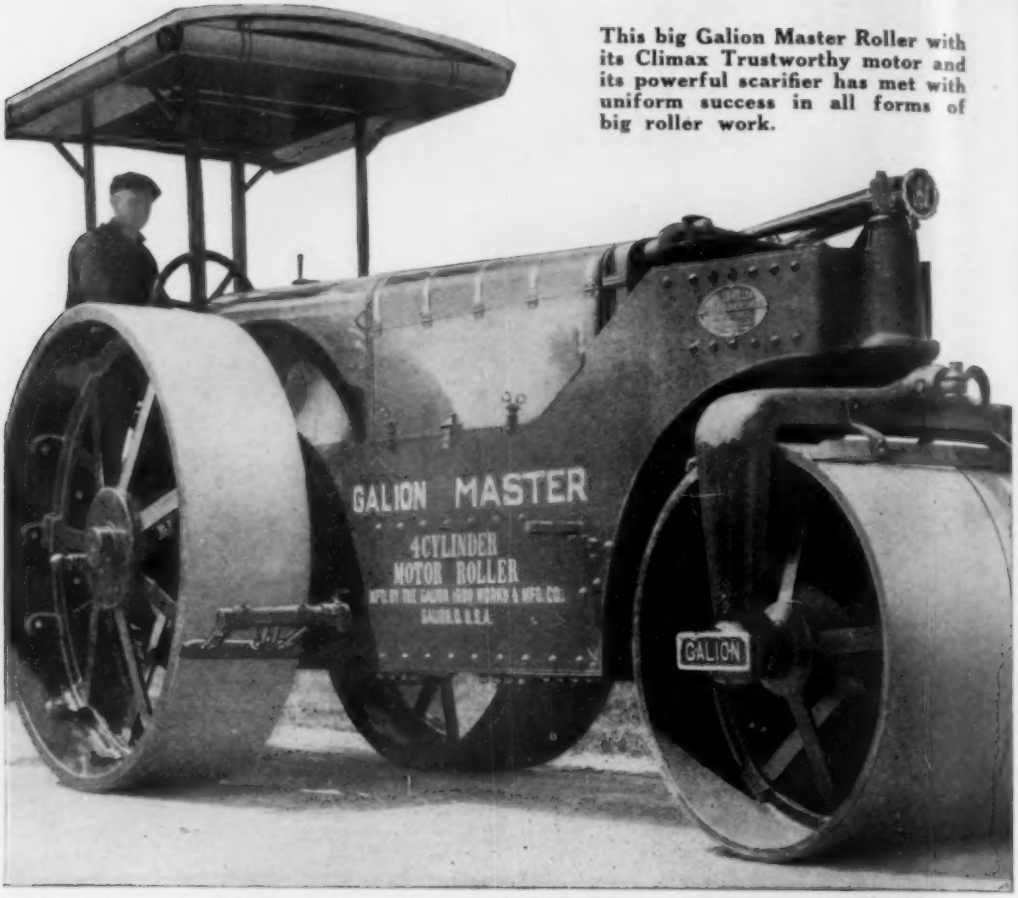
OCTOBER 23-26.—COLUMBUS, OHIO.
National Association of Commercial Organization Secretaries. Annual convention. Secretary-Treasurer, Clarence R. Miles, Chamber of Commerce, Davenport, Iowa.

NOVEMBER 10-11.—NEW YORK CITY.
National Municipal League. Annual convention. Secretary, H. W. Dodds, 261 Broadway, New York.

NOVEMBER 14-18.—DALLAS, TEXAS
American Society for Municipal Improvements. Annual convention. Address: E. A. Kingsley, City Engineer, Dallas, Texas, Chairman Convention Arrangements Committee.

WEEK OF NOVEMBER 28.—ATLANTA, GA.
Asphalt Association. Annual asphalt paving conference. Secretary, J. E. Pennybacker, 441 Lexington Avenue, New York.

JANUARY 9-13.—CLEVELAND, OHIO.
American Road Builders' Association. Annual convention and Road Show. Secretary, Ethel A. Birchland, Earle Building, Washington, D. C.



This big Galion Master Roller with its Climax Trustworthy motor and its powerful scarifier has met with uniform success in all forms of big roller work.

Modern Rollers to Meet Every Need

Motor Rollers and Steam Rollers, Tandem Rollers and Macadam Rollers, Large Rollers and Small Rollers are found in the Galion line in every size and type. Every Galion roller is modern, improved, perfected to meet modern conditions.

Galion many-purpose small rollers equipped with adjustable planers and hand-controlled or air-pressure scarifiers are made in 3- to 8-ton sizes. They meet many needs in city service from street maintenance to rolling parks and school grounds.

Write or wire for facts on the roller you need.

The Galion Iron Works & Mfg. Co., Galion, Ohio

Branches, Distributors and Representatives Everywhere.

GALION
STEAM AND MOTOR ROLLERS

Yes—we should like you to mention THE AMERICAN CITY.

News and Illustrations

Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings

P. T. L. New York Office Moved

The Pittsburgh Testing Laboratory, inspecting engineers and chemists, have announced the removal of their New York office and laboratory to 72 Washington Street, near Rector Street, New York. The New York officers of the Pittsburgh Testing Laboratory are Frederick V. Green, Vice-President, Harold W. Bates, Eastern Manager, and Mercer B. Mayfield, Jr., Chief Chemist.

New Climax Distributors

The Climax Engineering Co., Clinton, Iowa, has announced the appointment of the Hunter Machinery Co., Milwaukee, Wis., as distributor for Climax Engines and power units. The Hunter Machinery Company will maintain a supply of parts for Climax engines in Wisconsin and will also handle Climax engines in western Michigan, selling this territory through the Grand Rapids, Mich., office.

Announcement is also made of the appointment of the Belknap Hardware and Manufacturing Co., Louisville, Ky., as distributor for Kentucky, northern Tennessee, West Virginia, and portions of Virginia and North Carolina. Woodward-Wight & Co., New Orleans, La., are dealers in Climax engines for southern Louisiana and southern Mississippi.

Largest Shipment of Chlorine Control Apparatus

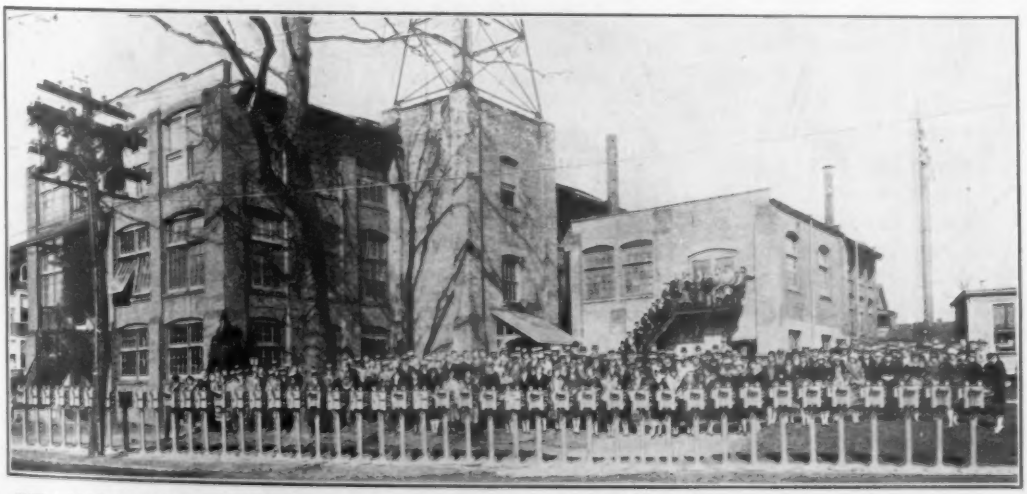
The chlorination of drinking water is sometimes regarded as a typical American practice, but it is interesting to note the rapidity with which chlorination is spreading throughout the world. Wallace & Tiernan Company, Inc., Newark, N. J., within the last few months has made several large export shipments of apparatus to Japan, India, Brazil, Argentine, Uruguay, and Chile. The largest of these is shown in the accompanying illustration. Forty-four of the new Type-MSP and Type-MDP chlorinators are for the Inspeccion de Agua Potables y Desagues of Chile.

In order to better care for its rapidly expanding foreign business Wallace & Tiernan Company, Inc., in addition to having authorized agents in many foreign countries, maintains its own offices in Buenos Aires, London, and Paris.

A Protective Coating for Concrete Pavements

An entirely new system, known as the Hunt process, has been developed by the Everlasting Paint and Sales Co., 704 Sun Finance Building., Los Angeles, Calif., for the treatment of newly laid concrete paving surfaces to promote rapid curing to prevent hair cracks and to give a better color to the surface for driving. The treatment consists of spraying a liquid coating of McEverlast protective coating on the surface with a spray gun, or it may be brushed on in cold form in the same manner as paint is applied. The base materials of this coating are Trinidad Lake asphalt and Utah Gilsonite, the greater part of the material being Trinidad Lake asphalt. These base materials, blended with other materials in lesser quantities and produced under certain processes, give the liquid coating.

The method of application to pavements is to follow the concrete mixer within thirty minutes



THE WALLACE & TIERNAN PLANT IN NEWARK, N. J., SHOWING THE 44 CHLORINATORS READY FOR SHIPMENT TO CHILE, BACKED UP BY A PORTION OF THE W. & T. ORGANIZATION

Years!

"IMPROVEMENTS" in paving come, make a brief sensation and pass. The experimental pavements laid of the new materials endure five years or ten —perhaps fifteen in some instances. Then they are torn up and replaced.

Only vitrified brick has proved its ability to withstand for a generation and more the triple attack of time, traffic and the elements—the only pavement that consistently and without exception *"outlasts the bonds"*.

Without making an exhaustive search, we know of 2 communities which are riding on 40-year-old brick pavements, 16 which are using brick pavements 35 years old, 17 enjoying 30-year-old pavements and 12 with brick pavements which have passed the quarter-century mark.

NATIONAL PAVING BRICK
MANUFACTURERS ASSOCIATION
ENGINEERS BUILDING CLEVELAND, OHIO

VITRIFIED
Brick
PAVEMENTS

OUTLAST THE BONDS

APPLYING ASPHALT FOR CURING A CONCRETE PAVEMENT BY THE HUNT PROCESS

to one hour applying a coating on the surface. Nothing more is done after this, and as a rule the street or highway is opened to traffic after the usual 14-day curing period. It is claimed that this gives an even cure which protects the pavement and is particularly valuable in extremely hot or windy weather, as it prevents drying out. It is stated that concrete paved streets have been opened for traffic within eight days without damage to the coating or the concrete.

Recently, comparative tests were made on the same street within a short distance, one section having been cured by the moist earth method and the other by the Hunt process. It is stated that after a period of eight months, under actual traffic conditions, the concrete cured by the Hunt process still showed the original float marks and no checking or cracks had developed. In addition, the coating was still effective as a "kill glare" and contrasted favorably with concrete cured by the dirt-and-water method, which had begun to dust off and show contraction cracks.

It is claimed that there is a peculiar quality to the product used that gives it an affinity for concrete, whether wet or dry. It has been shown that if there are still moist spots after concrete pavement is laid, the application of this product by means of a paint gun causes the material to form a film over the entire surface. When the water soaks into the concrete, the film adheres to the surface and forms an air-proof coating which prevents the evaporation of uncombined water from the body of the slab.

Northern Conveyor Opens Binghamton Office

The Northern Conveyor and Manufacturing Co., Janesville, Wis., has announced the opening of a permanent office in Binghamton, N. Y., under the direction of H. E. Whitnall, Vice-President of the company. Mr. Whitnall and his family will move to Binghamton, where he will take charge of the New York and New England agencies of the company. On his last return from the east, Mr. Whitnall reported that the New York State Highway Department had awarded him a contract for 11 machines. After this order is filled, the Department will have 54 Northern conveyors in operation.

A Compression-Type Fire-Hydrant

A fire-hydrant of the compression type is one in which the pressure of water in the line assists in closing the main valve and holding it in place. This prevents any lost water, flooding of streets, or injury to property in case the hydrant standpipe should become broken. In the Michigan Model-0 fire-hydrant made by the Michigan Valve & Foundry Co., Detroit, Mich., the closing of the hydrant valve automatically opens the drain valve. The water then runs from the hydrant standpipe through the drain hole into a circular canal in the seat ring, whence it discharges to the outside through several ports. A special feature of the design permits the entrance of air at the top of the hydrant. This insures the draining of the standpipe after the hydrant has been in use. Because of the compression feature of the hydrant, no stuffing-box or packing of any description is required at the top of the hydrant.

The main valve is made of high-grade oak-tanned leather and is securely held between the upper and lower clamps. This clamped valve is retained in place and locked to the valve-rods by a special bronze lock nut and pin. Only from four and one-half to five full turns are required to completely open the main valve. All the working parts subject to wear are made of bronze, except the steel valve-rod, the threaded portion of which works in the bronze operating nut.

One man can remove all internal parts, including the bronze main valve-seat, seat-gasket and drain valve-seat through the top of the hydrant standpipe without disturbing the standpipe and without digging. This is accomplished by simply removing the top of the hydrant and unscrewing the removable bronze seat-ring from the stationary bronze seat-ring with a spanner wrench.

Pittsburgh-Des Moines Moves Home Office

On April 1, the Pittsburgh-Des Moines Steel Company moved its home office from the Curry Building, Pittsburgh, Pa., to the Professional Building, 429 Penn Avenue, Pittsburgh, Pa. The Pittsburgh-Des Moines Steel Company makes steel storage tanks, and handles plate work and structural steel bridges, as well as complete filtration plants and municipal refuse incinerators.

Natural resurface on brick, Belleville, Ill.

Old asphalt resurfaced at Indianapolis

Rock asphalt on old gravel, Tupelo, Miss.

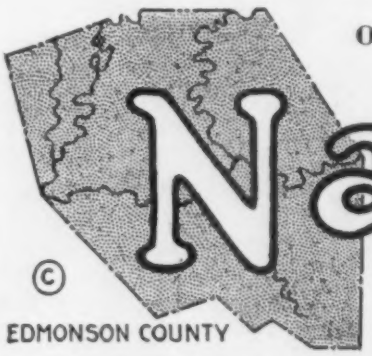
Union Ave., Memphis, Tenn. Resurfaced concrete

OLD streets which are solid but rough may be converted into smooth, long-life pavements by resurfacing with Natural Rock Asphalt. The cost is less than half that of a new pavement. Under favorable weather conditions, new surface can be laid at rate of a block a day and opened to treffic immediately. Natural Rock Asphalt surfaces are smooth noiseless, dustless and resilient. They do not shove, roll or rut under most severe traffic or heat. Write for Booklet AC-3.

NATURAL ROCK ASPHALT CORPORATION

(Incorporated)

Owensboro, Kentucky



Natural

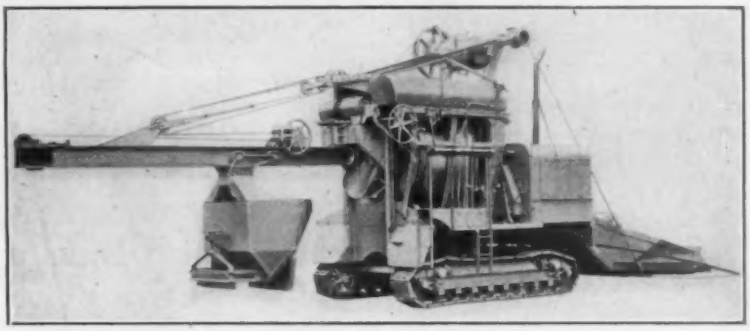
KENTUCKY
ROCK ASPHALT

Improvements in 27-E Paver

The new 1927 Rex 27-E paver made by the Chain-Belt Co., Milwaukee, Wis., is said to be the fastest ever built by that company. The improvements in this new paver are a new foldback top, power take-off and 6-cylinder motor in one unit, and governor booster. In addition to speed, new features have been added to synchronize the charging and discharging to keep two batches going through the paver all the time.

All operating levers are bronze-mounted to permit smooth operation and control. These levers are so grouped as to permit two or more operations to take place at one time. Charging, discharging, and getting water into the drum are now done, according to the manufacturer, in the time ordinarily devoted to charging alone. To accomplish this it was necessary to accurately time all three operations and allow for variation on different jobs. The operator now has at his command a faster mixing cycle which can save as much as 40 paving minutes in a day's work.

Another new feature is the unit power-plant employing a 6-cylinder gasoline engine. The power take-off is a part of the unit and consists of a direct speed reduction through heat-treated cut-tooth gears. These heat-treated gears are inclosed in a case and run constantly in oil. By this arrangement, vibration is subdued and reserve power created.



1927 MODEL REX 27-E PAVER

The new foldback top is entirely power-operated and may be raised or lowered in a few minutes. The water system rests crosswise on the foldback top, and the complete unit is lowered without dismantling the entire system. Water control is rapid, and accurate to the pint, requiring but 7 seconds to discharge the correct quantity into the drum.

The manufacturers state that other improvements include heat-treated steel mixing blade and buckets, drop-forged gears, alloy steel chassis, and spiral lime-proof cooling system. This cooling system is especially valuable for cold weather paving, as water of an even temperature may be used in mixing the batch.

Additions to Celite Staff

The Celite Products Co., 1320 South Hope Street, Los Angeles, Calif., has announced the appointment of Clyde E. Beckett and George S. Holland as additions to the engineering staff of the Concrete Department of its Chicago office. Mr. Beckett was formerly with the L. E. Myers Co. of Chicago, and Mr. Holland was formerly in the Engineering Department of the city of Des Moines and later with the Harrison Construction Co. of Des Moines.

Third Annual Outdoor Road Show

The Massachusetts Highway Association has announced its Third Annual Outdoor Road Show, to be held May 11 and 12, 1927, on the site of the two previous shows, at Cottage Farm Bridge and Memorial Drive, Boston, Mass. President John A. Gaffey of the Massachusetts Highway Association is the Director-General of the Show, and John M. McCarthy is Secretary. The Directors are: Fred W. Mattheis, Hedge & Mattheis Co.; C. F. Reuter, Mead-Morrison Manufacturing Co.; B. J. Surrett, Dyar Sales & Machinery Co.; James J. Tobin, Granite Paving Block Mfrs. Association; L. F. C. Bryant, Buffalo-Pitts Steam Roller Co.; Fred D. Richardson, Superintendent of Streets, Brookline, Mass.; and F. C. Pillsbury, Massachusetts State Engineering Department.

Special Train from New York for A. W. W. A. Convention

The Transportation Committee, of the Water Works Manufacturers Association, of which William C. Sherwood, 290 Broadway, New York, is Chairman, has announced that a special train has been arranged to take eastern delegates to the American Water Works Association Convention in Chicago. This train, which will leave the Pennsylvania Station, New York, Sunday, June 5, at 10:05 A.M., Eastern Standard Time, or 11:05 A.M., Daylight Saving Time, will arrive in North Philadelphia at 11:58 A.M., E.S.T.; Harrisburg, Pa., at 2:15 P.M., E.S.T.; Pittsburgh, Pa., 8:34 P.M., E.S.T.; and will arrive in the Union Station, Chicago, at 8:55 A.M., Central Standard Time.

The special train will consist of the latest type of sleeping-car equipment, including dining, club and observation cars. A reduced rate of fare and one-half for the round trip on the Identification Certificate Plan has been authorized for the convention.

Special table d'hote luncheon and dinner will be served in the dining car en route on Sunday, June 5, and an a la carte breakfast will be provided on Monday morning, June 6, before arrival in Chicago.

Arrangements for a special return trip of the party from Chicago via the Pennsylvania Railroad will be made if the demand is sufficient. It will be possible, should delegates wish to do so, to return via Washington, D. C., without extra charge for railroad fare, allowing time for sightseeing trips in the Nation's Capitol.

Delegates from the eastern seaboard should make reservations through the committee at once, naming the place where they will board the train,

Warrenite-Bitulithic Pavement

"A WARRENted Product"

No "Explosion Joints"

Where to put them, how many to put in, and just what to expect from them, are "explosion joint" problems that never confront the contractor who is laying Warrenite-Bitulithic Pavement.

Its continuous smooth surface, unbroken from end to end of the job, is easy to lay, and stays right for years. And down underneath is a rugged body which backs up the promise of service that is given by the shock-absorbing top layer which is a feature of this pavement.

Warren Brothers Company

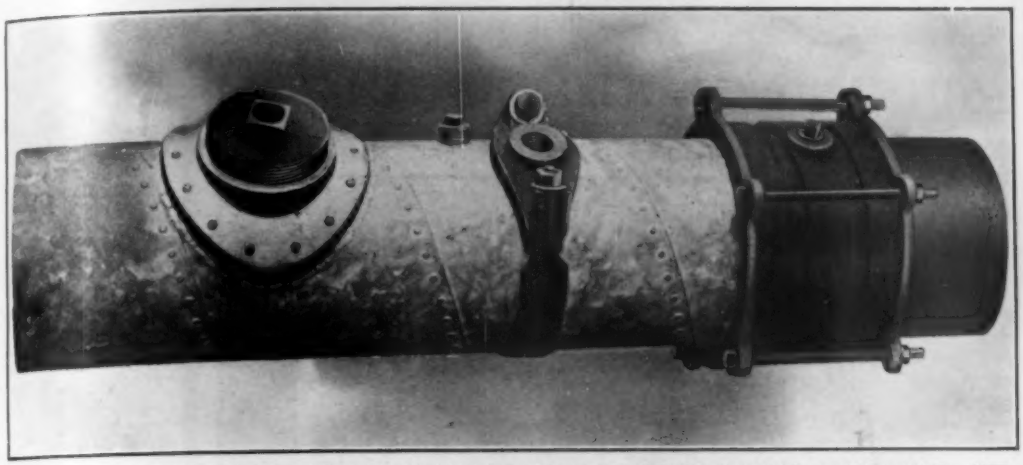
International Highway Engineers and Contractors

EXECUTIVE OFFICES:
Boston, Mass.

DISTRICT OFFICES:

New York, N. Y.
Portland, Ore.
St. Louis, Mo.
Harrisburg, Penn.
Vancouver, B. C.
Chicago, Ill.
Phoenix, Ariz.
Washington, D. C.
Utica, N. Y.
Minneapolis, Minn.
Oakland, Cal.
Birmingham, Ala.
Toronto, Ont.
Memphis, Tenn.
Los Angeles, Cal.
New Orleans, La.
Dallas, Texas
Charlotte, N. C.
Oklahoma City, Okla.
Salt Lake City, Utah
Melbourne, Australia
Sydney, Australia
Buenos Aires, R. A.
Tokyo, Japan
Havana, Cuba

Yes—we should like you to mention THE AMERICAN CITY.



TAPPING CONNECTIONS ON A ROOT SPIRAL RIVETED PIPE BY MEANS OF BOSS, CLAMP BAND, AND BOLTED JOINT

the accommodations desired, and whether or not they will return via Washington, D. C., as suggested above.

Manufacture and Use of Spiral Riveted Pipe

Root spiral riveted pipe was invented in 1867. During the last 60 years there have been many notable water-works installations of Root pipe for distribution mains, flow lines, well field systems to pump-house, river and lake intakes, and filtration pipe lines. An interesting example of stamina and longevity is the lines from wells to the pump-houses along the shores of Long Island, N. Y. In many instances these lines were laid across damp, spongy marshlands with little or no supporting structure, and at high tide they are frequently inundated. In addition to the severe action of the salt water, the corrosive action of the rotting vegetation is startling. Strains due to shifting and to this most trying corrosive action are severe demands, but Root pipe has functioned satisfactorily under constant suction head after fifteen or more years of this service.

In the manufacture of Root spiral riveted pipe, made by the Abendroth & Root Manufacturing Co., Newburgh, N. Y., open-hearth blue annealed steel sheets are used exclusively. They are re-squared to insure absolute accuracy, then passed through welding machines which join them into continuous lengths of from 200 to 400 feet, according to the gage of the metal. The strips are then tightly wound by power on large reels which are mounted on suitable carriages to move them to the pipe machine.

In the machine, by squeezing the burred edge of the upper strip against the lower strip and vice versa, a joint of unusual strength and integrity is assured, the spiral seam being equal to a calked job, were it feasible to calk such light material. The manufacturers state that Root spiral riveted pipe is fully 50 per cent stronger than straight single-riveted pipe of equal thickness, for the single continuous helical seam, running the full length of each pipe sections, provides a stiffening rib of great value. Root pipe is usually supplied in lengths of 25 feet in asphalt-coated, or 20 feet if galvanized, but shorter lengths can be supplied to suit individual requirements. Each piece of pipe is hydrostatically tested to 50 per cent in excess of the maximum contemplated working pressure.

These pipes are furnished with bolted joints, flanged joints, and slip joints. Tapping connections can be made at any point of spiral riveted pipe by the use of wrought iron clamp bands, but where their location is permanent and can be determined when an order is placed, tapped bosses riveted to the pipe are to be preferred.

A New Combined Check- and Gate-Valve

The advent of the centrifugal pump in pumping-stations produced some perplexing problems with check-valves. In 1924, David D. Goldberg of Chicago undertook the construction of a butterfly check-valve which would reduce the water-hammer attendant on sudden closing of the valve. An automatic hydraulic control was developed in combination with an hydraulic cylinder which caused the valve to close completely before rotation of the pump had ceased and before reversal of flow occurred. This method of operation eliminated water-ram and water-hammer, and the consequent damage suffered when a pumping-station was suddenly deprived of power or when a fuse was blown out, or the pump itself damaged to an extent that made it inoperative. This valve did not, however, eliminate other objections, such as loss of head from excessive friction and the leakage inevitable in this type of valve construction.

Further experiments led to the development of a valve built similar to the corporation cock, which could be made to hold tight and yet afford a clear, continuous pipe way, thus reducing friction. The problem of making the plug rotate freely was solved by introducing an axial movement to lift the plug from contact with the casing before rotating. Thus the cone valve made by the Automatic Cone Valve Co., 32 West Randolph Street, Chicago, Ill., came into existence.

In opening the valve as soon as the pump builds up pressure equal to the head, the control valve allows water from the mains to enter the bottom of the hydraulic cylinder of the cone valve. This pressure causes the piston in the hydraulic cylinder to rise, lifting the cone plug from the seat. During the first half of the travel of the piston the cone plug is lifted only one-quarter of an inch, suffi-

Again the years repeat the message

for durability—
pure iron corrugated culverts

PROBABLY there is no place in road construction where durability is more essential than in culverts. Buried away they receive little or no attention—yet it is of utmost importance that they function with unfailing certainty.

On this 31st anniversary of the corrugated culvert, it is significant to note that of the many ***black iron*** culverts installed by the inventor, James H. Watson, more than 85 per cent are in service today.

The purity of the iron in these original culverts has been preserved and improved throughout these years by ARMCO—today and for many years the only pure iron made. A five-year investigation — nation-wide, covering thousands of culverts—has proved (1) that only a flexible culvert can endure under field conditions—most culverts fail through fracture, (2) that pure ARMCO Iron is the answer to corrosion.

Because of ARMCO dependability, the Association has adopted a policy of urging culvert buyers to make an unbiased investigation in their locality—"Look Under Your Roads." ARMCO engineers will gladly demonstrate ARMCO durability from records of actual service.

Armco Culvert Manufacturer's Association

Middletown, Ohio

Forty manufacturing plants throughout the United States and Canada assure you immediate service on drainage requirements, no matter where you may be.

ARMCO CULVERTS

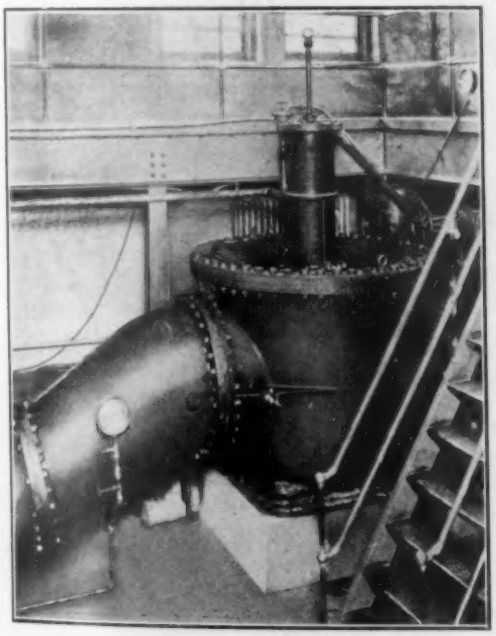
"Predominant in use because predominant in quality"—Look Under Your Roads

cient to free it from the seat. The second half of the travel of the piston causes the cone plug to rotate a quarter-turn to line up the aperture in the plug with the pipe line. The valve remains open until the closing is desired, when a turn of the handle will close it. In case of emergency, however, the closing operation is accomplished automatically. In closing, as soon as the velocity drops below normal on the pump side of the valve, the control valve is forced down automatically, thereby directing the water-supply from the mains to the top of the hydraulic cylinder, simultaneously releasing the supply at the bottom to atmospheric pressure. This causes the piston to move downward. The first half of the stroke turns the plug back to its original position with the aperture at right angles to the pipe line, and the second half of the stroke forces the plug downward one-quarter of an inch until it seats firmly. The first half of the piston stroke is accomplished in a few seconds, and the turn of the plug placing the aperture transversely across the "flow" is sufficient to shut off enough of the supply from the distribution system to prevent any damage from reversal of flow. The second half of the piston stroke, however, slowly eases the plug into the seat, effectively sealing the pipe line.

This automatic cone valve can also be manually controlled. It can be completely closed while the pump is running, or throttled to any position desired, so that the amount of flow can be regulated to maintain the desired pressure in the distribution system. At no time, however, is the automatic closing of the valve interfered with. Furthermore, the plug being rigidly held in bearings whether in closed, open or throttled position, the cone valve does not rattle.

The closing time of cone valves varies according to sizes. In a test made in a Chicago pumping-station, a 30-inch automatic cone valve connected to a 30,000,000-gallon electric centrifugal pump operating against 50 pounds pressure closed in 5 seconds from the time power was cut off from the pump. The motor, however, idled for more than 1½ minutes, during part of which time a pressure of 30 pounds was maintained between the pump and the valve. The recording instruments in the meantime showed that pressure in the distribution system did not mount ½-pound during the closing operation or immediately thereafter.

The cone valve is adapted to street use, as it is built without stuffing-boxes and offers no pockets for the collection of grit and sediment. It can be buried with the mains, as manholes and vaults are unnecessary. It is connected to a control box on the sidewalk. The turn of the key in one direction or the other will open or close the cone valve at proper speed, thus eliminating the slow and laborious methods of operating gate-valves in the distribution system. Bad leaks, which cause much damage because of the time lost waiting for a crew to arrive with equipment necessary to close the larger hand gates, can be stopped in a few minutes where cone valve equipment is installed.



36-INCH AUTOMATIC CONE VALVE IN THE 68th STREET PUMPING-STATION, CHICAGO

Auditorium Floors Proofed Against Wear

The public auditorium for the city of Cleveland, Ohio, has attracted considerable attention among those interested in construction and engineering, because of the way the cement floors have withstood the constant and heavy traffic to which they have been subjected since construction. The floors in the balconies of the public hall for five years have been subjected to the constant shuffling grind of thousands upon thousands of feet, according to S. W. Flesheim, President, Master Builders Company, Cleveland, Ohio. Close examination shows that, regardless of this source of attrition, the floors are in the same fine condition as when laid. Master Builders hardeners were used on the auditorium job.

Power Spraying of City Shade Trees

Dusting undoubtedly has a place in certain orchard work, but for the control of the many forms of scale and insect life which infest our large shade trees, it is acknowledged by experts that the wet method is at present the only dependable one.

"Solid Stream" spraying apparatus, made by the Fitzhenry-Guptill Company, 135 First Street, East Cambridge, Mass., makes it possible for the stream of solution to reach to the tops of the trees, where it is broken into a very fine mist, thus doing away with the necessity of using a ladder or climbing the tree itself. As the cost of spraying large trees or woodlands depends upon the labor cost and not the cost of spraying materials used, it is obvious that the solid-stream method will spray large trees and woodlands at a much lower cost than is possible when ladders or climbing must be resorted to. The sprayer must have sufficient capacity in gallons per minute and delivery pressure to throw a stream of sufficient size with such force that the stream is not only delivered to the top of the trees, but there broken into a very fine mist.

A sprayer must not only have this great capacity, but must be light enough to travel on park roads and on lawns, when necessary, without rutting. To meet these conditions and furnish a portable machine, the Fitzhenry-Guptill Company has built its pump of phosphor bronze with chrome-nickel steel drop-forged cranks, and the engines are of the slow-speed heavy-duty truck type.

LINCOLN PARK
CHICAGO

Chicago Concrete Lighting Standards have been installed on the new outer drive in Lincoln Park and illuminate the most beautiful part of the city's north lake shore.

The Lincoln Park System has used Concrete Lighting Standards for over 20 years.

Why?

Because of the low first cost
Because there is practically no maintenance cost
Because of their dignified beauty and artistic design
And because of their remarkable durability!

In selecting lighting standards follow the leadership of the noted big users who choose

CHICAGO CONCRETE STANDARDS

for Lincoln Park System

South Park System . . . . . 2,425 Standards
City of Chicago . . . . . 21,550 Standards

Let us help you solve your lighting problems!

CHICAGO CONCRETE POST COMPANY
PAUL K. FLEMING, President
Lawrence, Lamon and Leland Avenues
Chicago, Illinois, U. S. A.

RYAN MACHINE CUTTING MATERIAL OUTSIDE THE WHEEL-BASE AND FOUR FEET BELOW THE WHEEL-BASE

A New Motor-controlled Grading Machine

The new Ryan motor-controlled grading machine with leanable frame and double reversible moldboard is offered by the Ryan Manufacturing Co., 310 South Michigan Avenue, Chicago, Ill., in four sizes, Nos. 14, 12, 10, and 8 carrying blades ranging in length from 8 to 14 feet.

The first illustration shows the Ryan No. 14 grading machine positioned for cutting a 10-foot bank while working in a deep ditch. The leanable frame is righted, equalizing the weight distribution and stabilizing the machine for heavy work. This operation does not require any special attachment with this machine. All heavy bank cutting, as well as back sloping, is done with the regular moldboard of the machine. The Ryan moldboard has four points and two edges available for plowing and cutting. This is made possible by its double reversible construction, which permits reversing the face as well as turning the moldboard end for end. In the first illustration, the moldboard is in the center notch. It can be shifted on its supports two notches either way from this position, giving an additional reach. The length of the blade on the No. 14 machine is 14 feet with a 36-inch shift.

This machine is not a "muscle-controlled" grader. It is a motor-controlled grading machine, the old style hand wheels being replaced by levers operated through safety clutches, positioning the machine and moldboard quickly as needed.

The second illustration shows the Ryan machine cutting material outside the wheel line and 4 feet below the wheelbase. This position is suitable for cleaning and cutting ditch bottoms and slopes while operating the machine on the road.

The machine can also be positioned for plowing outside the line of its wheels, throwing material away from the machine and toward the fence. This is made possible by the exclusive feature of reversing the face of the moldboard on the circle arms and by the specially designed circle which operates through the entire 360 degrees of its circumference. The circle, like all other controls on the Ryan machine, can be stopped and automatically locked in a secure position at any point in its travel. The steerable tongue and leanable front wheel mechanism add to the facility of the operation.

The leanable frame shifts one ton of weight where needed. If the machine were operating with one wheel in a ditch and without the frame being leaned, it would bring a pressure of 5,400 pounds on the lower wheel and only 1,200 on the upper. By shifting the frame, however, the weight is distributed, with 3,200 pounds on each wheel.

RYAN No. 14 GRADER IN POSITION TO MAKE CUT FOR 10-FOOT BANK

W. S. Cetti Now with Buffalo Meter Co.

The Buffalo Meter Co., Buffalo, N. Y., has announced that William S. Cetti, formerly eastern sales manager of the Badger Meter Manufacturing Co., has been appointed special eastern sales representative for the sale of Buffalo meters. Mr. Cetti will operate in Massachusetts, Rhode Island, Connecticut, New York, New Jersey, eastern Pennsylvania (east of the Susquehanna River), Delaware, and Maryland. Mr. Cetti is also eastern sales representative for Vogt Brothers Manufacturing Co., Louisville, Ky., makers of valves and hydrants.

A Portable Hardwood Picket Snow-Fence

Officials in the snow states, having been through a particularly hard winter, have not yet forgotten the drifts which covered many of the outlying roads of cities or county highways, and are still interested in some method of preventing the formation of drifts that are particularly difficult to handle even with the best snow-removal equipment.

The theory of drifts is that snow particles that are suspended in the swiftly moving current of air are dropped as the velocity of the air current is reduced while passing through, around, or over a well-designed snow-fence. Cyclone Red Tag snow-fence, made by the Cyclone Fence Company, Waukegan, Ill., costs about $50 installed, for sufficient fence to keep the snow from drifting into a cut 150 feet long.

The materials used in Cyclone snow-fence are extra-heavy galvanized copper bearing steel wire, a high-grade paint and square-sawed maple or birch pickets, ½ x 1½ inches, spaced 2 inches apart. The snow-fence is woven by especially designed automatic ma-

Keep the Children Safe!

With Cyclone Fence enclosing playgrounds, the coming and going of children is orderly and controlled. They enter and leave the grounds through established gateways, located at points of greatest safety. During play periods they are prevented from dashing into busy streets. Cyclone Fence keeps them out of danger.

Cyclone Fence also influences the movements of traffic at playgrounds. Motorists soon learn the location of exits and exercise special care in driving past these points. Automobiles and trucks that jump the curb are stopped at the fence line. Cyclone Fence is strong and sturdy to withstand great impacts. It's the fence for maximum protection at playgrounds—the only fence made entirely of Copper-Bearing Materials.

The Mark of Dependable Property Protection

CYCLONE FENCE COMPANY

To Municipal Boards: Automobile traffic is constantly growing and danger at exposed playgrounds is daily increasing. It is the duty of every city to make schools and playgrounds safe. Take action now. Install Cyclone Fence during the summer months, when the work can be handled at minimum cost.

Write nearest offices for Cyclone Catalog and complete information.

Cyclone Fence Company

Main Offices, Waukegan, Ill.

Works and Offices: North Chicago, Ill., Cleveland, Ohio, Newark, N. J., Fort Worth, Texas.

Branches in All Principal Cities
Pacific Coast Distributors:
Standard Fence Company, Oakland, Calif.
Northwest Fence & Wire Works, Portland, Ore.

FOR SCHOOLS AND PLAYGROUNDS

Cyclone Wrought Iron Fence. Built in a variety of standard designs; also in special designs from architects' drawings.

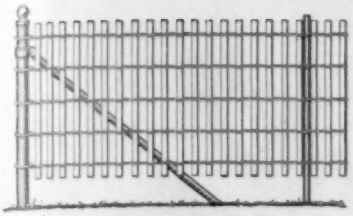
Cyclone Fence
REG. U.S. PAT. OFF

The only fence made entirely of copper-bearing materials—for maximum endurance.

©C.F. Co. 1927

FOR ATHLETIC FIELDS

Cyclone Invincible Fence. Chain Link fabric, tubular steel posts and framework — all Copper-Bearing materials.



CYCLONE RED-TAG SNOW-FENCE ON BANNER STEEL POSTS

chines, which give a tight lock of the cable on the pickets with two complete twists to each picket and reverse on alternate pickets. The posts are usually spaced 10 to 12 feet apart in the fence line. The fence easily adjusts itself to uneven ground and travels over rises and through drops with the pickets standing in a perpendicular position. Each roll of Red Tag snow-fence contains 100 lineal feet of 48-inch fence weighing 3.7 pounds per lineal foot.

The ends of the pickets extend 4 inches beyond the top and bottom cables, and the ends of the rolls join together easily, there being no wrong side and no top or bottom to match. This snow-fence can be installed permanently or can be removed each year from areas where crops or gardens are planted.

Committees of the Water Works Manufacturers Association for the Chicago A. W. W. A. Convention

The following committees have been announced by John S. Warde, Rensselaer Valve Co., New York, President of the Water Works Manufacturers Association, for the coming convention of the American Water Works Association in Chicago June 6-10:

Entertainment Committee: Burt B. Hodgman, National Water Main Cleaning Co., Chairman; Fred G. Merkle, Wallace & Tiernan Co.; Theodore R. Kendall, The American City Magazine; W. R. James, Mueller Company; and Frank Erwin, Hersey Manufacturing Co.

Ladies' Entertainment Committee: Mrs. W. E. Sherwood, Chairman; Mrs. J. E. O'Leary, Mrs. M. F. Tiernan, Mrs. John S. Warde, Mrs. William W. Brush, Mrs. John Ericson, and Mrs. Arthur E. Gorman.

Golf Committee: W. D. Hess, Builders Iron Foundry, Chairman; C. E. Braun, U. S. Cast Iron Pipe & Foundry Co.; Tom Dix, The American City Magazine; George C. Sudheimer, Department of Public Utilities, St. Paul; and A. T. Clark, Water Department, Herkimer, N. Y.

Exhibit Committee: J. E. O'Leary, Pittsburgh-Des Moines Steel Co., Chairman; J. D. Capron, U. S. Cast Iron Pipe & Foundry Co.; C. M. Reed, Central Foundry Co.

Transportation Committee: W. E. Sherwood, Hersey Manufacturing Co., Chairman; G. M. Kiefer, Rensselaer Valve Co.; C. R. Knowles, Water Department, I. C. R. R., Chicago; R. V. Benton, Mueller Company; Laurence C. Hough, Boston, Mass.; H. M. Lofton, Columbian Iron Works; Joseph Ivy, American Cast Iron Pipe Co.; and C. B. Abbott, Water Works Supply Co., San Francisco.

Press Committee: L. S. Holbrook, Engineering News-Record, Chairman.

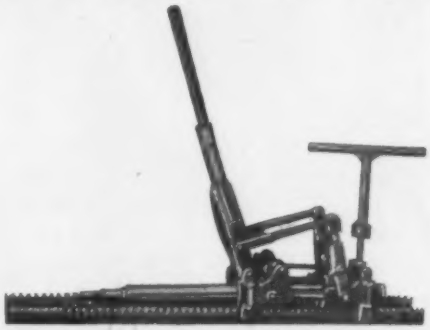
Registration Committee: S. W. Jacobs, Electro Bleaching Gas Co., Chairman; Burt B. Hodgman, National Water Main Cleaning Co.

Publication Committee: Edgar J. Buttenheim, The American City Magazine, Chairman.

A Pipe Pusher for Installing Services

One of the best examples of the savings effected through the use of a pipe pusher in installing a water service or conduit pipe is where a Standard Easy pipe pusher made by the Easy Manufacturing Co., Lincoln, Nebr., was set in an unpaved alley and a 1-inch pipe pushed across a paved street to a manhole 100 feet away. Increasing-couplings were put on and the pipe pulled back through, and in two such pulls the diameter was enlarged to 5½ inches and a fiber conduit was installed. The total time of the work was one day for two men, and the estimated saving as compared to cutting an open ditch was over $125.

The Standard Easy pipe pusher is 10 inches wide, 12 inches high, and 50 inches long and weighs 100 pounds. All the parts are made of



THE EASY STANDARD PIPE PUSHER

malleable iron or steel. The machine rolls on a cog track. The cog drive principle is used, as it is positive and powerful. The machine cannot slip, wedge, or bind with this type of drive. There is double compound leverage and a minimum of friction, all of the power being delivered to the pipe, making it possible for one man to push over 4 tons. The triple backstop pawls take care of the back lash and spring of the pipe. The driving pawls are instantly reversible for pushing or pulling. The pipe pusher has a positive vice clamp on the pipe. It is easily set and released by means of a wrench and holds the pipe in a straight line. The Easy pipe pusher is also made in two other sizes for handling larger pipe. The eastern distributors are Montgomery & Co., New York.

Haiss Has Philadelphia Office

The George Haiss Mfg. Co., 139th Street and Rider Avenue, New York, is now represented in the Philadelphia territory by its own factory represenetative, Ralph H. Smith, at Buist Avenue and Berbro Street, West Philadelphia, Pa. The George Haiss Mfg. Co. manufactures truck loaders, portable belt conveyors, clamshell buckets, cars, cut-off gates, unloading and loading machinery, hoisting engines, revolving screens, elevators, and conveyors.

Central Foundry Co. Moves Office

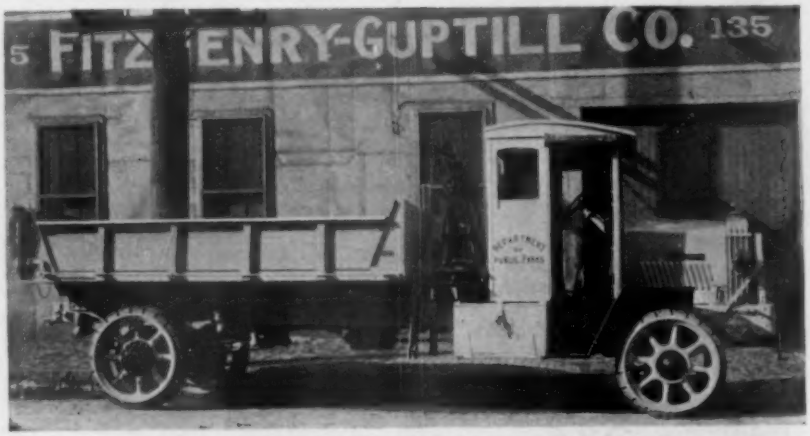
On May 1 the Central Foundry Co., maker of Universal cast iron pipe, moved its maln office to the twelfth floor of the new Graybar Building, 420 Lexington Avenue, between 43rd and 44th Streets, New York.

The Solid Stream Method Can Be Safely Used Near Dwellings

POWER SPRAYERS

In last month's issue we illustrated the City of Springfield's apparatus as a spraying machine, while in this issue we illustrate the same apparatus with spraying attachment removed and a Wood Hydraulic dump body in combination with a Mead-Morrison winch in place.

In mounting the sprayer attachment, it is not necessary to disturb the hydraulic hoist or winch, only the body proper needing to be removed; the actual time involved in making such a change being less than one hour. A valuable equipment for any Department. Catalog on request.

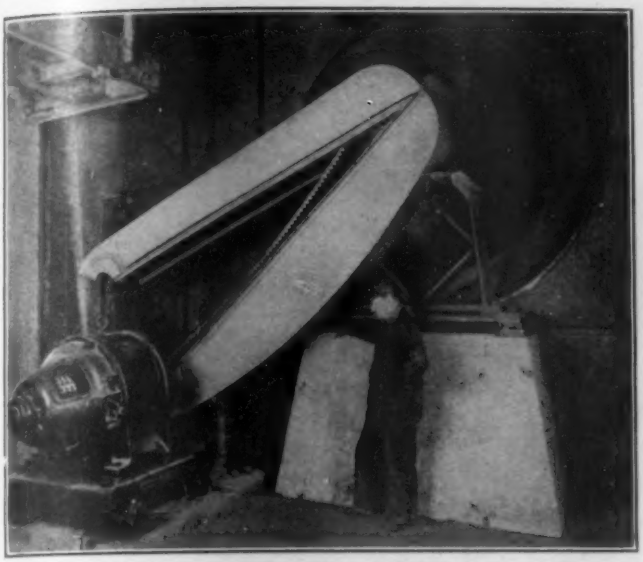


The City of Springfield's Apparatus as a Commercial Truck

FITZHENRY-GUPTILL COMPANY

135 FIRST STREET, EAST CAMBRIDGE, MASS

Do you mention THE AMERICAN CITY when writing? Please do.



179-HORSEPOWER LINK-BELT SILENT CHAIN DRIVE OPERATING STURTEVANT BLOWER FOR VENTILATING THE HOLLAND TUNNEL, NEW YORK AND JERSEY CITY

Ventilating-Fans for Holland Tunnel

The type of fan that will be used to ventilate the Holland Tunnel under the Hudson River between New York and New Jersey is the "Silentvane," manufactured by the B. F. Sturtevant Co., Hyde Park, Boston, Mass., driven by slip-ring motors manufactured by the Westinghouse Electric & Manufacturing Co., Pittsburgh, Pa., and with Link-Belt silent chain drive, made by the Link-Belt Co., 910 South Michigan Avenue, Chicago, Ill. Individual buildings have been constructed to house this equipment, one land and one river shaft ventilation building on each side of the river. Blower and exhaust fans have been placed in each building, the fresh air being blown through concrete ducts to the space under the roadway and forced through openings on both sides of the roadway, spaced every 15 feet the entire length of the tunnel. The air reaches the roadway through a continuous slit 18 inches above the roadway, and the volume is controlled by adjustable plates.

The Link-Belt Co.'s portion of the order for ventilating equipment amounted to 84 silent chain drives and castings, the horsepower of the units ranging from 14 to 179, and the total of the 84 units amounting to 6,333 horsepower. The smallest chain is 1-inch pitch, and 2 inches wide, and the largest 1½-inch pitch, 13 inches wide. All the casings, one of which is shown open in the illustration, are dust-tight and oil-retaining.

The Wheat Culvert Co., Newport, Ky.

One of the most experienced metal culvert men in business, W. H. D. Wheat, has organized the Wheat Culvert Co., Inc., of Newport, Ky., which will manufacture and sell Toncan copper Mo-lybde-num iron culverts exclusively in the states of Kentucky, Tennessee, and Indiana. Mr. Wheat is well known in the culvert business and has many friends among county officials and road contractors and other users of culvert pipe throughout the territory.

Fairbanks-Morse Takes Over Fairbanks Scale Business

Fairbanks, Morse & Co., 900 South Wabash Avenue, Chicago, Ill., has taken over the entire scale business of the Fairbanks Company of New York. In 1916, Fairbanks-Morse purchased the E. & T. Fairbanks Co., with its scale factories in St. Johnsbury, Vt., and East Moline, Ill. The Fairbanks Company of New York, however, held the distributing rights for Fairbanks scales in the eastern and southern portions of the United States and abroad. The present transaction, therefore, gives Fairbanks-Morse complete control of the manufacturing and distribution of Fairbanks scales. A scale-manufacturing plant in Birmingham, England, as well as the London sales agency and all other sales agencies throughout the World, is included in the deal.

The History of Plumbing

A. D. Guion, Publicity Manager, Bridgeport Brass Co., Bridgeport, Conn., gave a lecture on the history of plumbing before the convention of the Southeastern Water and Light Association held in Jackson, Miss., April 26, 27, and 28. This lecture was compiled from a series of historical plumbing advertisements which the Bridgeport Brass Co. has been running in the plumbing papers for the last two years. It was illustrated with artistically colored slides and gave much more ancient history than is contained in the published reprint.

Fence Manufacturer Changes Name

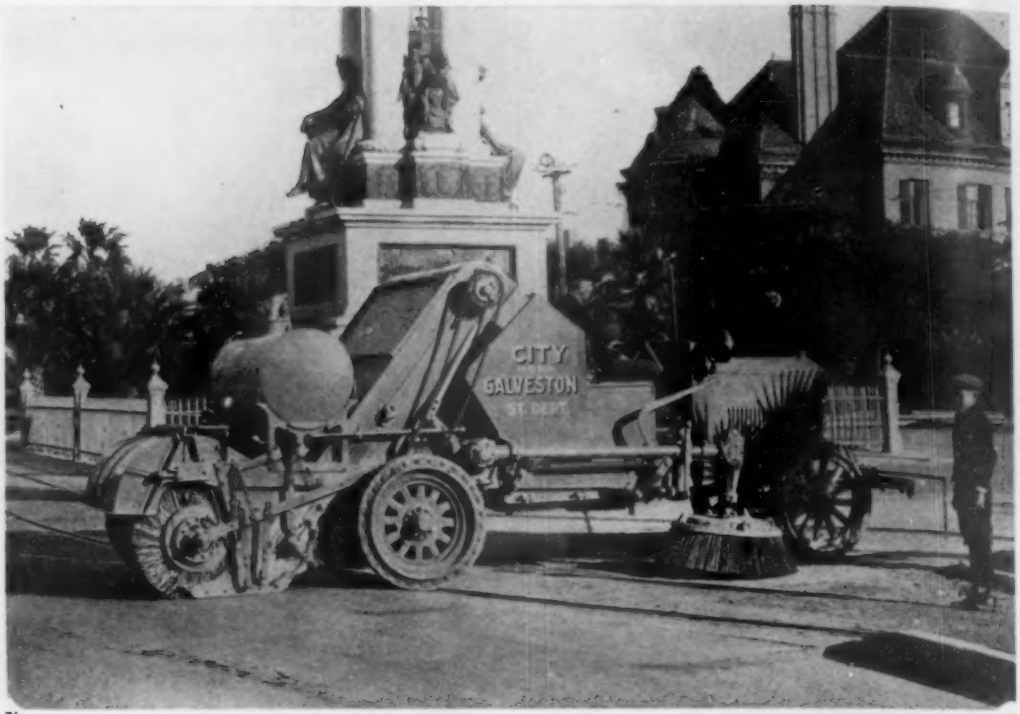
The Anchor Post Iron Works, 9 East 38th Street, New York, has announced a change of name to the Anchor Post Fence Co., in order to more closely associate the company with its product.

Date of National Conference on Asphalt Paving

The Sixth Annual Asphalt Paving Conference is to be held at the Atlanta-Biltmore Hotel, Atlanta, Ga., during the week of November 28, 1927. The conference is held under the auspices of the Asphalt Association, of which J. S. Helm of the Standard Oil Company of New Jersey, New York City, is President.

The Association of Asphalt Paving Technologists —Hugh W. Skidmore, Chicago Paving Laboratory, Chicago, President—will cooperate with the Asphalt Association in the holding of this joint conference.

The Fifth Annual Asphalt Paving Conference was held in Washington in November, 1926, and brought together more than 600 state, county, and city engineers, paving contractors, asphalt producers, consulting engineers, and others identified with asphalt paving. The conference proved most productive of interesting and valuable discussions of the subjects connected with asphalt paving.



"A Clean City"

THAT is what every fellow likes to say about his own "home town"—and that is what you should be able to say about yours.

Perhaps you can—but are the streets, which have so much to do with the appearance of a city, being kept as clean as they should, and is the work being done as economically as possible?

For the average community an Austin Motor Pick-up Sweeper is unquestionably the cheapest and most efficient method of keeping the pavements in a clean and sanitary condition.

The people of your city want clean streets. You are the man who can make this possible, and by so doing bring credit to your administration and to yourself.

Send for a copy of the special Motor Sweeper catalog which discusses street cleaning methods in detail—or perhaps you would like to have one of our experts go over your particular problems with you and make his recommendations based on the experiences of hundreds of similar cities. Our reputation is staked on his report. You couldn't buy that for millions. That is your guaranty as to the honesty and sincerity of our statements.

WRITE US TODAY

Austin Manufacturing Co.

Established 1858

400 N. Michigan Ave. **Chicago, Ill.**

A Warning Torch for Construction Work

The new McCloskey bombshell torch, developed by the McCloskey Torch Company, 3343 Collingwood Ave., Toledo, Ohio, is a worth-while piece of equipment for water departments, public works departments, sewer departments, and other city utilities that need to warn users of highways that construction work is under way.

These torches are made of ⅛-inch rolled and pickled deep-drawn steel and have 5½ pounds of cast iron counterbalance pressed in the bottom, preventing the torch from being knocked over. The torch holds three quarts of oil and is furnished with wick all ready to fill with kerosene and light. These torches will burn from Saturday night until Monday morning with just one filling, as they do away with the need of dangerous barricading.

Thieves do not care for these torches, as they are suitable for construction work only. The manufacturers state that they remain lighted during the hardest wind and rain storms and are easily carried by a special handle.

Latest Improvements in Road-Marking Machine

The Tennessee Tool Works, Inc., Knoxville, Tenn., has announced that the 1927 Model of the Ault traffic-line marking machine has a number of improvements over the older equipment. The principal change is that of moving the painting element, so that the spray and brushes are now located alongside the right front wheel. Under the old method a slight movement at the rear of the machine was reflected in the line being painted ahead of the machine, but since changing the location of the brushes, this has been entirely eliminated.

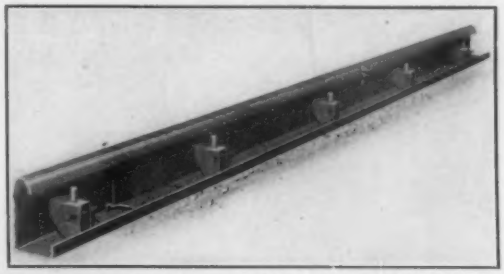
The machine is now several inches shorter and is even easier to operate than the old type. Many of the users of the old models are now having their machines converted into the new type. A patent has been awarded to the Tennessee Tool Works on a rear flowing brush just back of the spray nozzle, the object of which is to smooth up any surplus paint. The addition of this brush has greatly improved the class of work performed and at the same time enables the operator to shut off his spray before reaching the end of the line and allowing the flowing brush to complete the line.

THE 1927 IMPROVED AULT TRAFFIC LINE MARKER

Steel Road Forms with Four Stake Pockets per Section

Announcement has recently been made by the Lakewood Engineering Co., Cleveland, Ohio, manufacturers of the Carr road form, that this form is now provided with four stake pockets per 12-foot section. High-carbon steel stakes ⅞-inch in diameter are used. The form is locked to the stakes by a simple key wedge.

This improved method of staking, together with the other features of the round top, wedge lock joint, and 12-foot section, has proved advantageous.



THE NEW CARR STEEL ROAD FORM WITH FOUR STAKE POCKETS PER 12-FOOT SECTION

Benson Elected Vice-President

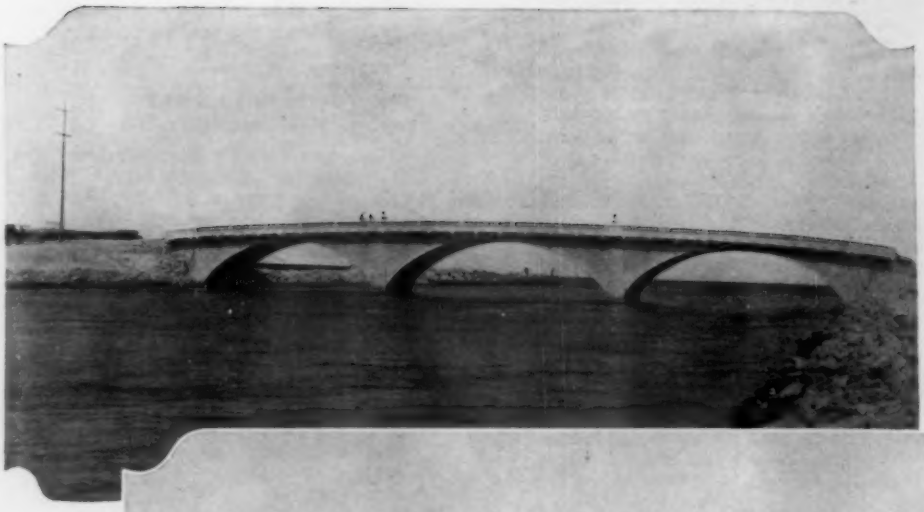
The Niagara Metal Stamping Corporation, Niagara Falls, N. Y., manufacturers of the Premax line of steel tent equipment, metal house numbers and letters and other specialties, has announced the election of George O. Benson, its Sales Manager, as Vice-President in charge of sales. Mr. Benson's new post carries with it a recognition of his many years of success with the company.

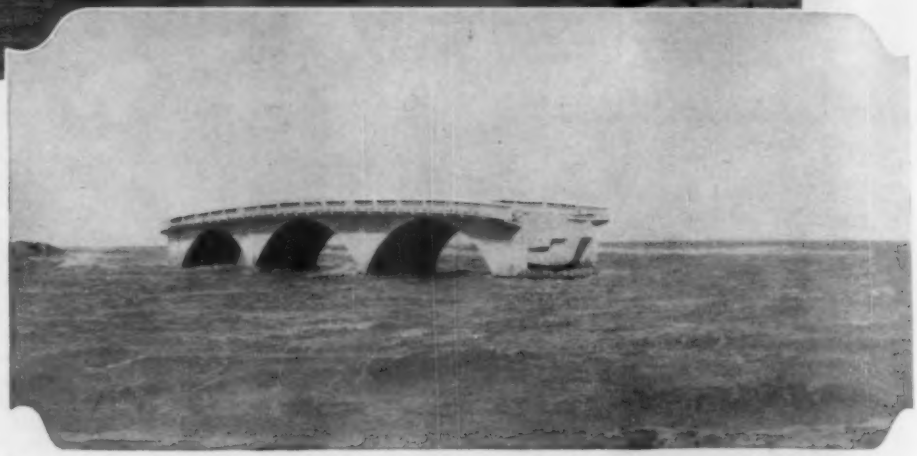
Southwestern Office of Chicago Bridge and Iron Works Moves

The Chicago Bridge and Iron Works, 2127 Old Colony Building, Chicago, Ill., has announced the removal of its southwestern district sales office from the Praetorian Building, Dallas, Texas, to the Dallas National Bank Building, in the same city.

Burroughs Adds Separate Accounting Division of Interest to Cities

The Burroughs Adding Machine Co., Detroit, Mich., has announced a separate division of its organization to further the development of mechanical accounting methods for public service corporations and municipal utilities departments. The new division will be known as the Public Service Division, with headquarters in the general offices of the Burroughs Company. A. S. Trew is in charge, and is assisted in Detroit by C. E. Werner, former General Auditor of the Western New York Utilities Corporation; G. A. Schoggen, formerly of the Arkansas Power & Light Company; A. L. Whitelaw, and G. C. Atkins.





Even a Hurricane Failed to Damage this *Concrete* Bridge

Baker's Haulover Bridge, near Miami, Florida. Designed by Daniel B. Luten, Bridge Engineer, Indianapolis, Ind. Erected in 1924 by Luten Bridge Co., York, Penna. Built of reinforced portland cement concrete, with piers and abutments in 17 feet of water. Total length, approximately 250 feet. Illustrations show bridge before and after the hurricane of September, 1926.

THE Florida hurricane of September, 1926, furnished dramatic proof of the meaning of the phrase "Concrete for permanence."

Baker's Haulover Bridge, located over an artificial inlet to Biscayne Bay, near Miami Beach, Florida, received the full force of the hurricane. Waves broke 20 to 30 feet over the bridge, and washed away the roadways leading to it for several miles in both directions, leaving the bridge in the middle of an 800-foot channel. But—the bridge itself, *built of reinforced portland cement concrete*, was left undamaged, in perfect condition!

This event demonstrates that reinforced portland cement concrete bridges, properly designed and erected, will withstand the most severe forces of wind and wave, even in the most exposed locations.

PORTLAND CEMENT *Association*

Concrete for Permanence CHICAGO

ASSEMBLING A FOUR-WAY ALUMOYD STREET SIGN

Aluminum Alloy Street Signs

Almost every type of street and traffic sign, both for municipal and for highway use, is included in the Alumoyd line of the Alumoyd Sign & Signal Co., Michigan at 11th Street, Chicago, Ill. The aluminum alloy used is known as Alumoyd and, according to the manufacturers, after years of service the signs made of this material have shown no deterioration due to rust, corrosion or oxidation.

The coloring matter used in the letters for these signs is a special preparation which is not lacquer, paint, or enamel. It is a permanent material that is guaranteed by the manufacturer not to chip, crack, or peel under the most adverse conditions.

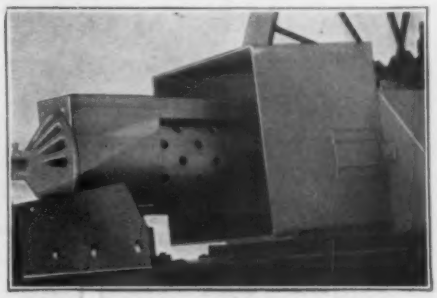
Street signs, zone markers, stop signs, and all other traffic signs should be put on a lasting basis in every town or city. Street signs in particular should be legible and durably constructed, with uniform lettering and made of a material which indefinitely combats the elements of the weather. Postal authorities require adequate street signs and house numbers installed before postal delivery service will be established. It is also necessary to maintain and replace old, dilapidated signs. If permanent, durable signs are installed in the first place, it will effect a saving to the city, and replacement costs will be minimized. East Chicago, Ind., Fort Thomas, Ky., Watertown, Wis., Mount Clemens, Mich., and other cities have recently purchased Alumoyd street signs in order to place their sign equipment on a permanent basis.

Improvements in Oil-Burning Melting-Kettle

Several new features have been announced by Littleford Brothers, 500 East Pearl Street, Cincinnati, Ohio, in the Type 84-W Littleford oil-burning tar and asphalt melting-kettle. These features, shown in the accompanying illustrations, consist of a removable windshield to protect the burner, and a new design of cover and of front splash guard.

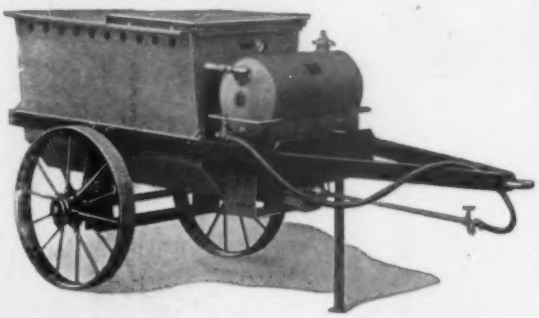
The windshield is made of steel plate and completely surrounds the flame of the torch, eliminating all possible interference of the wind with the operation of the burner. The cover is made in two sections as heretofore. One section, however, is bolted down and the other is hinged to it. This construction makes it impossible for the cover to be jolted out of position. The hinged section lies on top of the stationary section when open. Under the hinged section of the cover is a grid on which barrels may be placed for drainage. This grid is removable.

The front splash guard is located at the top of the melting-tank, and consists of a steel plate extending 3 inches horizontally inside the tank, and then flanging down for three-quarters of an inch. This guard prevents the contents from spilling out

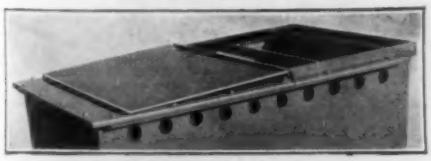


WINDSHIELD TO PROTECT OIL BURNER

of the front end of the tank when the kettle is trailed. At the read end of the tank the bolted-down section of the cover accomplishes the same result. This Littleford oil-burning melting-kettle is made in three capacities—50, 75, and 110 gallons.



IMPROVED LITTLEFORD MELTING-KETTLE, NO. 84-W



NEW DESIGN OF COVER

New Yeomans Representatives

Yeomans Brothers Co., 1417 Dayton Street, Chicago, Ill., have announced two new representatives, A. R. Amos, Jr., 1014 Harrison Building, Philadelphia, Pa., and C. L. Knehr, 521 Hubbel Building, Des Moines, Iowa. These representatives will handle a complete Yeomans line, which includes sewage ejectors, bilge pumps, house pumps, and condensation return pumps.

LOVELLITE

TRAFFIC SIGNALS

MEET THE DEMAND
OF
The Small Town
AS WELL AS
The Big City

F. H. LOVELL & COMPANY
Highway Traffic Signal Dept.
ARLINGTON, N. J.

Lamp Posts

Service Boxes

Valve Boxes

Write for Prices
&
Complete Lighting Catalog

The Casey-Hedges Co.
Chattanooga, Tenn.

ALUMOYD TRAFFIC SIGNS
ROADPILOT—THE IMPROVED REFLECTING SIGNAL

Street Signs
Zone Markers
Direction Signs
Highway Markers
Etc.

All Castings of Special Alloyed Aluminum

Write for Catalog and Prices.

Alumoyd Sign & Signal Co.
Formerly
Automatic Signal & Sign Co.
Michigan at 11th St., Chicago, Ill.

INEXPENSIVE PARKING SIGNS

We can furnish you with a two-face, baked enamel, embossed sign, in patented holder, with pole bracket, for $4.70! And it is the most attractive outfit made—and extremely durable.

Send for our handsome catalog on Street Signals, Standards and Parking Signs. It is free!

ROCHESTER STREET SIGNAL CO.
400 Ward Bldg. Rochester, N. Y.

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A licensed engineer with long experience and the best of qualifications wishes an engagement as engineer with a municipality which will appreciate faithful conscientious service and the highest ability, combined with discretion and vision.

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